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SMITHSONIAN DEPOSIT

THE IRON AGE

A Review of the Hardware, Iron, Machinery a... S.

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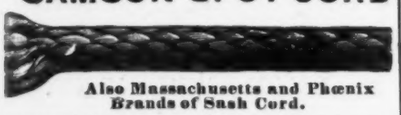

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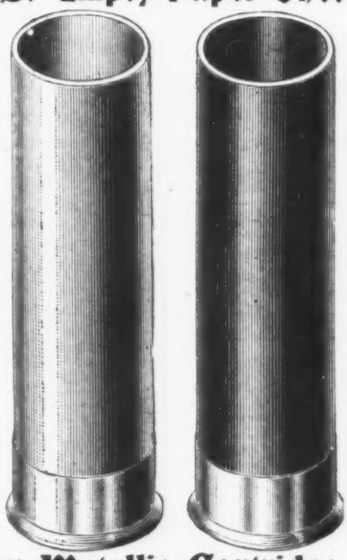

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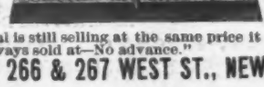

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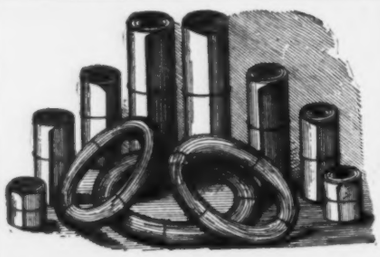

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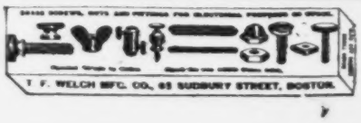

T. F. WELCH MFG. CO., 65 SUDBURY STREET, BOSTON.

THE IRON AGE.

THURSDAY, OCTOBER 19, 1899.

The New York Rapid Transit Tunnel.

Contract for Construction and Operation Approved—Bids to be Invited.

During the last week Corporation Counsel John Whalen approved the contract for the construction and operation of the Rapid Transit Railroad as formulated by the Rapid Transit Commission. At a meeting of the Commission, held immediately after the approval of the contract, President A. E. Orr of the board laid the contract before the commissioners and stated that bids would be advertised for without delay.

In order to facilitate operations the system has been divided into four sections. Only the first section will be built now. This section extends from the City Hall terminus of the route to Fifty-ninth street. This entire section will be underground. There will be required for this portion about 11,660 tons of steel beams, 11,860 tons of riveted steel, 1093 tons of cast iron columns, 5231 feet of iron pipe ranging from 6 to 54 inches diameter, 106,617 lineal feet of 80-pound steel rails and five pumps.

Including the material just mentioned, there will be required for the four sections complete, 22,439 tons of steel beams, 20,466 tons of riveted steel, 7921 tons of cast iron columns, 11,507 feet of iron pipe, 304,801 lineal feet of 80-pound rails, 23,500 tons of steel viaduct, which will be erected in sections two, three and four, and eight pumps. There will, of course, be needed a considerable quantity of machinery to be used by the contractor in the erection. The road must be equipped with either electricity or compressed air. This will necessitate the erection of a power generating station.

The contractor will be required to furnish bonds aggregating $14,000,000 for construction and equipment, and also a continuing cash bond of $1,000,000.

The contract must be made for the construction and operation of the entire system, or four sections. These sections are designated as follows:

Section 1. From southern terminus at City Hall to Fifty-ninth street; section 2, from Fifty-ninth street to 135th street; section 3, from 135th street to Fort George; section 4, from Fort George to Melrose avenue terminal.

The contractor shall construct and fully equip each section separately.

Description of Route.

The railway to be built commences at a point in Park row near Frankfort street, with a two-track loop under the City Hall Park, Broadway, and Park row to the above mentioned point near Frankfort street, where there commences a four-track line running thence under Centre street, New Elm street, Lafayette place, across Astor place and private property between Astor place or Eighth street and Ninth street to Fourth avenue at Ninth street; thence under Fourth avenue and Park avenue to Broadway, and thence under Broadway and the Boulevard to a point at or near Ninety-seventh street, all of which railway shall be known as the Main Line.

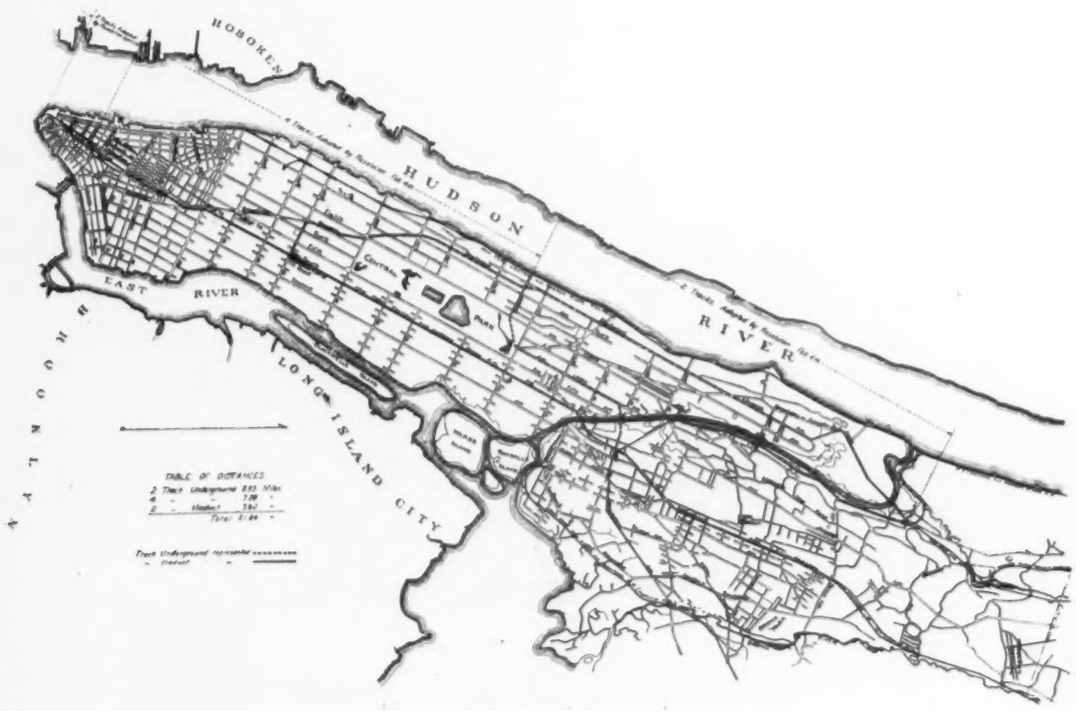


Fig. 1.—Map.

NEW YORK RAPID TRANSIT TUNNEL.

On the four-track portion above mentioned the inside tracks are to be used by express trains stopping only at comparatively long distances, and the outside tracks by local trains stopping at shorter distances.

East Side Line.—At a suitable point north of the construction of these crossovers the outside tracks will rise so as to permit the inside tracks, on reaching a point near 103d street, to curve to the right, passing under the north bound track and to continue thence across and under private property to 104th street; thence under

104th street and Central Park to 110th street near Lenox avenue; thence under Lenox avenue to a point near 142d street; thence across and under private property and the intervening streets to the Harlem River; thence under the Harlem River and across and under private property to 149th street; thence under and along 149th street to Third avenue, to Weschester avenue, where at a convenient point the tracks will emerge from the tunnel and be carried on a viaduct along and over Westchester avenue, Southern boulevard and Boston road to Bronx Park.

West Side Line.—That portion of the railway from the north end of the crossovers at or near Ninety-seventh street to Bronx Park shall be known as the East Side Line.

From the northern end of the above mentioned crossovers, at or near Ninety-sixth street, the outside tracks shall rise, as previously described, and after the over crossing of the inside tracks, they shall be brought together on a location under and as far as possible symmetrical with the center line of the street and proceed along and under the Boulevard to a point between 122d and 123d streets, at which point the tracks shall commence to emerge from the tunnel and be carried on a viaduct along and over the Boulevard to a point between 134th and 135th streets, where they shall again pass into and continue in tunnnel under and along the Boulevard and Eleventh avenue to a point about 1350 feet north of the center line of 190th street, where the tracks shall again emerge from the tunnel and be carried on a viaduct across and over private property to Elwood street, and over and along Elwood street to Kingsbridge road or avenue, private property, the Harlem Ship Canal and Spuyten Duyvil Creek, private property, Riverdale avenue or 230th street, to a terminus near Bailey avenue.

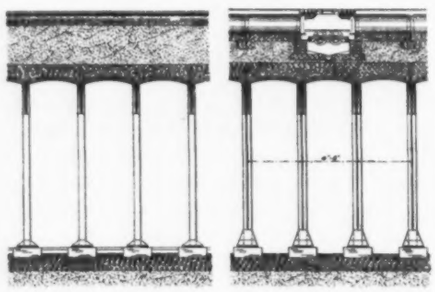


Fig. 3.—Longitudinal Section Fig. 2.

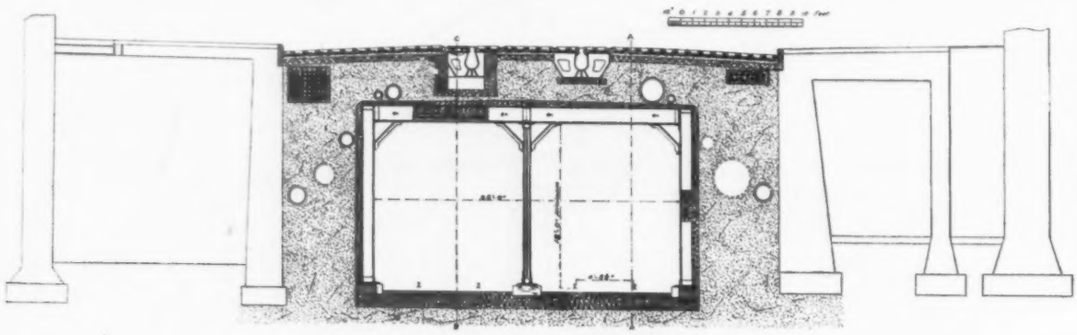


Fig. 2.—Typical Two-Track Section.

NEW YORK RAPID TRANSIT TUNNEL.

That portion of the line from the north end of the crossovers at or near Ninety-seventh street to the above mentioned terminus shall be termed the West Side Line.

Width of Tunnels.—The maximum widths of the tunnel in the clear shall be as follows:

For the route under Park Row and the City Hall Park loop, 38 feet; for the route from at or near the south end of Centre street and to the commencement of New Elm street, 50 feet; for the route from, at or near the commencement of New Elm street to Lafayette place, 68 feet; for the route from, at or near the commencement of Lafayette place to the junction at or near 103d street, 50 feet; for the west side route from the junction at or near 103d street to Kingsbridge station, 25 feet, and for the east side route from, at or near the junction at 103d street to Bronx Park, 25 feet, except that, wherever the nature of the streets, necessitates a curve, an additional width of tunnel may be added not exceeding 3 feet for each track, and except that on Fourth avenue, from Thirty-second street to Forty-third street, the permissible width shall be 65 feet; and for the tunnel beneath the Harlem River and its approaches, the permissible width shall be 35 feet. At each cross street where accommodations for pipes, wires, sewers and other subsurface structures have been provided within the tunnel, the tunnel may, in order to provide convenient access to such pipes, wires, sewers and other subsurface structures, have, within the limit of the sides or exterior lines of such cross street or such lines produced, an additional width on each side of the route not to exceed 15 feet, and the area of additional width on either side not to approach nearer than 12 feet to either side or exterior line of such cross street. Footways between the tracks shall be provided the whole length of the line and accommodations arranged for the convenience and protection of employees.

Hight of Tunnels.—The roof of the tunnel shall be as near the surface of the street as street conditions and grades will permit. The tunnel shall not be less than 13 feet in hight in the clear. Whenever necessary for the proper support of the street surface, the roof of the tunnel shall be of iron or steel girders with brick or concrete arches supported by iron or steel columns and masonry walls, or the roof shall be a masonry arch. Viaducts shall be built with a width of 12½ feet for each track and with an additional width of 3 feet on each side for outside footways. Viaducts may be built of metal or masonry, or of both.

Open Excavations.—Along the Boulevard there may be openings in the surface of the street from the tunnel for the purpose of ventilation and light; such openings shall be guarded by convenient and ornamental inclosures. The openings shall not exceed 20 feet in width and 50 feet in length. No two openings shall be within 50 feet of each other. No opening or part thereof shall be within the limits of, or opposite to, any street intersecting the Boulevard; and within the distance of any one block on the Boulevard between any two adjacent crossing streets there shall not be more than two such openings.

Obligations of Contractor.

The contractor will furnish all the materials and labor necessary for the purpose and construct the railroad, including therein the stations, side tracks, switches, crossovers, terminal yards and all other appurtenances com-

plete and ready for operation, and including also all necessary construction of sewers along or off the route of the railroad, all necessary readjustment of the mains, pipes, tubes, conduits, subways or other sub-surface structures, the support and care, including underpinning wherever necessary, of all buildings of whatsoever nature, monuments, elevated and surface railways affected by or interfered with during the construction of the railroad and the reconstruction of street pavements and surfaces, and do all the work and supply all the materials necessary to construct and equip the railroad complete and finally ready for actual operation. The contractor shall provide a complete equipment of the railroad. The

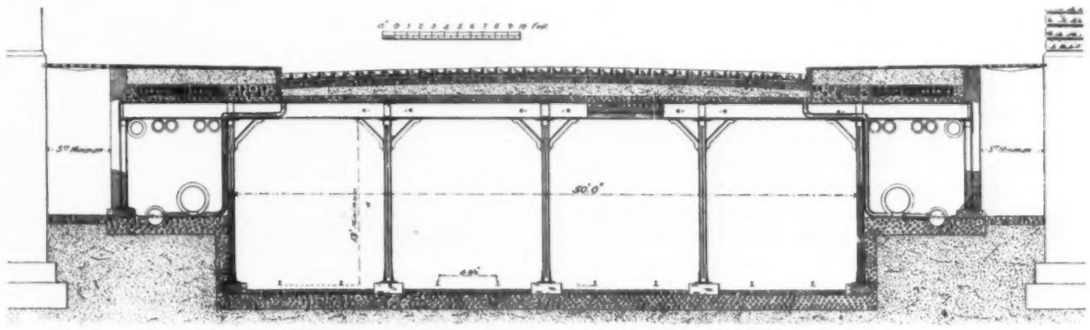


Fig. 4.—Typical Four-Track Section with Pipe Galleries.

contractor shall begin work on the railroad within 30 days after the execution of the contract. The first section must be completed within three years from the date of the delivery of the contract. Each additional section should be completed in two years after the previous section has been placed in operation.

Steel and Iron Specifications.

The steel used in this work shall be of two grades, medium steel and rivet steel. All steel shall be made by the open hearth process and may be either acid or basic, with the following maximum limits of phosphorus:

	Acid. Per cent.	Basic. Per cent.
Medium steel	0.06	0.04
Rivet steel	0.06	0.04

The finished work shall be perfect in all parts and free from irregularities, surface imperfections of all kinds and piping. No deficiency in the cross section or weight of sections, as called for by the plans, exceeding 2½ per cent., will be permitted.

The original melt number must be painted or stamped on all ingots, blooms, billets and slabs, in order to identify the material throughout the various processes of manufacture, and the original melt number, together with the furnace heat number, in case of eye bar flats, must be stamped on each piece of finished material, except in the case of rivet steel and small pieces not forming part of the calculated sections and members, which may be shipped in bundles wired together, with the melt number on a metal tag attached.

Two sample bars not more than 2 inches wide, having a sectional area of not less than ½ square inch, shall be cut from the finished product of every melt. When taken from metal more than 2 inches thick, they may be turned round bars. Tests shall be made on these sample bars in their natural state, without annealing. Measurements to determine elongation shall be made on an original length of 8 inches. When a melt is rolled into several classes of shapes the material of each class shall be separately tested, in which event one sample bar for each class will suffice. The test pieces when tested in a lever machine shall on an average for each melt fulfill the following requirements:

	Ultimate strength. Pounds.	Elastic limit. Pounds.	Elongation. Per cent.	Reduction of area. Per cent.
Medium steel	58,000 to 66,000	33,000	20	44
Rivet steel	50,000 to 58,000	28,000	27	54

The entire fracture shall be silky.

Bending Tests.—A piece of each sample bar, whose thickness is at least 5-16 inch, after being heated to a cherry red, and cooled in water at a temperature of 70 degrees F., shall be bent cold 180 degrees and closed up against itself. In no case shall any crack appear until the diameter of the circle around which the bar is bent becomes less than the thickness of the bar.

In the case of rivet steel the sample bar shall close up against itself without showing any crack or flaw.

Punching Tests.—Punched holes pitched 2 inches from a sheared or rolled edge in a piece at least ⅜ inch thick must stand drifting until their diameters are 50 per cent. greater than those of the original holes, without signs of cracking in the plate.

Duplicate Tests.—Duplicate tests may be made when the test pieces pass five of the above mentioned requirements and the chemical analysis. If the second tests pass all requirements the melting will be accepted.

Cast Iron.—All castings shall be made of tough gray

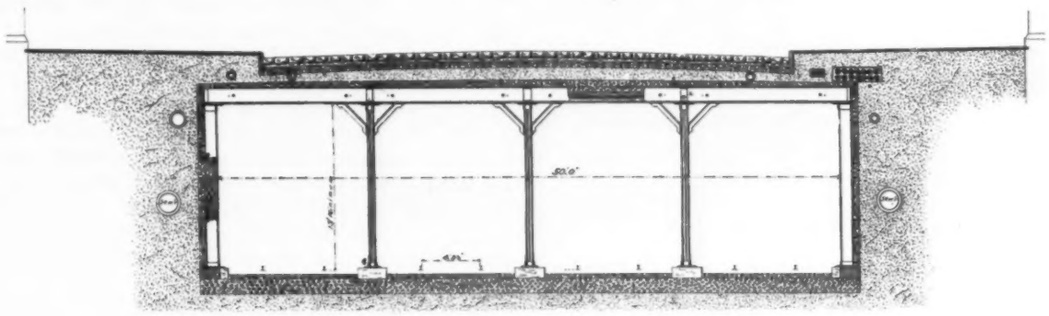


Fig. 5.—Typical Four-Track Section.—Alternate Plan.

NEW YORK RAPID TRANSIT TUNNEL

iron, which shall exhibit a uniform and closely grained fracture free from any white, mottled or vitreous appearance. It shall be soft enough to be readily cut, drilled and chipped, and when struck on a corner or edge with a hammer, the metal shall indent and not break off.

Tests.—The metal must exhibit a tensile strength between 18,000 and 24,000 pounds per square inch when measured on a test specimen, from which the external coating or skin has been entirely removed by turning, planing or milling. When tested in the rough state with the skin retained, sample bars or castings having a uniform width and depth of 1 inch and a length of 40 inches shall, when placed horizontally upon two sharp edged supports 36 inches apart, sustain at their middle point a gradually applied load of 750 pounds, with a deflection at the center of 0.4 to 0.6 inch.

Test Bars.—The contractor shall make, prepare and provide at least two of the said cross breaking test bars and the same number of said tensile test bars from each charge or running of the metal actually used in the manufacture of any castings for said work. Two of the test bars of each set shall be poured at the beginning and two at the end of each charge or running. The tension bars shall be of such size and form as may be required by the engineer or his representative. All such specimens are to be true samples of the iron used in the castings made from said charge or running. All test specimens are to be properly numbered for reference.

Average of Tests.—In judging the suitability of the metal the average of these tests shall be considered as representing the strength of the metal as required aforesaid.

Cast Steel, Annealed.—All steel castings shall be annealed.

Test Pieces.—Every steel casting shall be made with a coupon for testing, which coupon shall be cut off after annealing, and the test shall be made from a ¾-inch round cut from the coupon. The test piece shall show an ultimate strength of at least 70,000 pounds, an elastic limit of not less than 35,000 pounds, an elongation of at least 15 per cent. in 2 inches, and a reduction of area of 20 per cent. at the point of fracture.

Blowholes.—When the bearing surface of any steel casting is finished there shall be no blowhole visible exceeding 1 inch in any direction, nor exceeding ½ inch in area. The length of the blowholes, gauged by any straight line laid in any direction, shall never exceed 1 inch in 1 foot.

All rolled members shall be straightened at the shop before assembling.

Rivets.—The nominal size of the rivets shown on the plans shall be understood to be the actual size of the cold rivets before heating. Rivets when driven must completely fill the holes, have full heads concentric with the rivet holes, and be machine driven wherever practicable, the machines to be capable of retaining the applied pressure after the upsetting is completed. The rivet heads must be fully and neatly finished, of approved hemispherical shape and in full contact with the surface, or be countersunk or flattened when so required, and of a uniform size for the whole diameter of the rivet throughout the work, and must bind the connecting pieces thoroughly together.

All loose or otherwise imperfect rivets must be cut out and replaced. No tightening of rivets by calking or recupping will be permitted.

Rivet holes must be accurately spaced.

Drift Pins.—The use of drift pins will be allowed only to bring together the several parts forming a member, and they must not be driven with sufficient force to distort the metal about the holes.

If any hole has to be enlarged to admit the rivet, it must be reamed.

Punched Rivet Holes.—Rivet holes in the cross frames, lateral connections, columns where the rivets are shop driven, and such other holes in the metal of the viaduct portion of the work not exceeding ⅝ inch in thickness, as the engineer may permit, and rivet holes in members composing the frame of the underground structure, except rivet holes for splices in the bottom flanges of roof beams, may be made by a punch whose diameter is 1-16 inch greater than that of the rivets called for by the plans.

All punched holes shall be free from torn or ragged edges, sharp fins being trimmed off before riveting.

Reamed Rivet Holes.—Rivet holes in the viaduct work other than those specified above, and in splices and connecting splice plates of the underground structure, as above mentioned, shall be made by a punch whose diameter is not greater than that of the rivets called for on the plans, and subsequently increased by reaming to a diameter 1-16 inch greater than the rivets specified. Before this reaming takes place all the pieces to be riveted shall be assembled and bolted into position. After reaming, every hole shall be entirely smooth, showing that the reaming tool has everywhere touched the metal. Should such reaming fail to produce a perfect match of cylindrical holes, then the rivet holes must be made by a punch whose diameter shall be ⅛ inch less than the specified rivets, and subsequently increased by reaming 3-16 inch. When required by the engineer a reamer shall be run on the outer edge of holes so as to remove the sharp edges and make a fillet of at least 1-16 inch in width under the rivet head.

Rivet holes in the flanges of important built up girders whose thickness is over ⅝ inch shall be made by a punch whose diameter is ⅛ inch less than the specified rivets, and shall be subsequently increased by reaming 3-16 inch.

Reaming of Field Rivets.—All holes for field rivets, where reaming is called for by the preceding paragraphs, shall be reamed to iron templets at least 1 inch thick, or shall be reamed while the connecting pieces are temporarily assembled either in shop or in the field.

Members to Be True.—All built up members, when finished, must be true and free from twists, kinks, knuckles or bent joints between component pieces. All abutting surfaces of compression members, except flanges of plate girders, must be planed or turned to even bearings, so that they shall be in perfect contact.

Columns to Be Faced.—All I-beam and built up columns, after gusset plates are riveted on, shall be faced top and bottom perpendicularly to the axis and to exact length. The lug angles shall then be set so as to produce an even bearing as determined by a straight edge. If lug angles are not set to give an even bearing, then the same shall be riveted on before facing, but such facing shall not reduce the thickness of angles more than 1-16 inch. The base and cap plates must also be true to surface.

Web Plates.—Web plates must not project beyond the flange angles, nor be more than ¼ inch from the same. The web stiffeners of the plate girders shall in all cases form a close bearing against the flange angle.

The ends of all stringers, and longitudinal and abutting girders, shall be faced true and square or to exact bevel, as called for by the plans. The header angles shall be so accurately fitted that when the ends of the stringers or girders are faced to the figured length the amount of metal removed shall not reduce the thickness of the ends of the header angles by more than 1-16 inch, while securing a true surface on the whole width of the connection.

Beam Ends.—The abutting ends of the beams in the roof of the underground portion of the work must either be faced or cold sawed so smooth, true, square and perfectly perpendicular to the longitudinal axis of the beams that joints will be tight and give full bearing of beam ends.

Universal Mill Plates.—All plates 36 inches and less in width shall have universal mill rolled or planed edges.

When members are connected by bolts which transmit shearing stresses, the holes must be reamed parallel and the bolts have a driving fit.

Anchor Bolts.—All anchor bolts are to be of soft steel with cold pressed or rolled members and so made that

when tested to destruction, the threaded portion of the bolts will develop greater strength than the unthreaded portions of the same.

All threads and nuts, unless otherwise ordered, shall be of the United States standard.

Steel sections must not be hammered cold or worked at a black heat. When any part of the steel piece in which the full strength is required has to be heated for working, the whole shall be afterward annealed.

All pieces bent or otherwise injured will be rejected.

Specifications for Track Material.

The track shall be laid of the best materials and to the standard and in the manner best calculated to make a track on which trains can be run at the highest attainable speeds with the minimum of jar and noise.

Track Underground.—In the underground portions of the railway the track shall consist of rails laid on a continuous bearing of wooden blocks, the grain of which is to be transverse to the length of the rail. The blocks are to be held in place by guard rails secured to metal cross ties embedded in concrete. The method of procedure shall be to set the cross ties accurately to grade and support them by blocking until the concrete composing the finishing floor can be rammed into place and has set. This concrete must be brought to a true surface, to exact grade, and flush with the tops of the cross ties, as tested by a level and straight edge. On this foundation there will be laid and secured the guard rails, wooden blocking and track rails, as shown by the plans and according to the directions of the engineer.

Tracks on Viaducts.—The tracks on viaducts shall consist of rails laid on cross ties with wooden guard timbers, in the manner as described hereafter.

Rail Section.—The section of the rail rolled shall conform to the section adopted as standard by the American Society of Civil Engineers, a templet of which will be furnished by the Board. The weight of the rail per linear yard shall not be less than 80 pounds. No variation in hight exceeding 1-64 inch from the standard section will be permitted, and the fit of the fishing or male templet shall be maintained perfect.

Length of Rails.—The standard length of rails shall not be less than 30 feet. Rails of shorter length will be accepted to the extent of 10 per cent. of the order, but no rail less than 26 feet in length will be accepted as No. 1 quality.

Chemical Composition.—The chemical composition of the rails will be left to the rail maker's judgment, except carbon must not be less than 0.55 per cent., nor exceed 0.65 per cent.; phosphorus must not exceed 0.085 per cent.; sulphur must not exceed 0.07 per cent.; silicon must not be less than 0.10 per cent.

Tie Plates.—On every tie and in the proper place beneath the rail seat there must be set a tie plate, having ribs running longitudinally with the cross tie. Such tie plates must be pressed into position, if required by the engineer, before the rails are laid.

Each tie, where resting on the top flange of longitudinal girders, shall be held to the flange of the same by hook bolts with nut locks.

Guard Rails.—Guard rails shall be laid the whole length of each track and on both sides of the rail. In the underground work these guard rails shall be of steel in the shape of bulb angles, or such other form as may be permitted by the engineer.

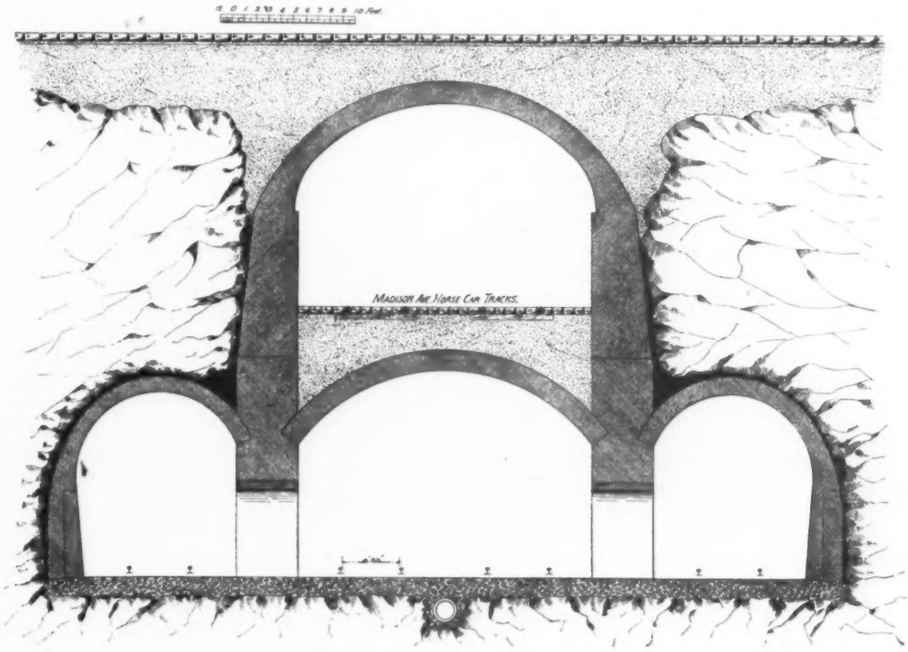


Fig. 6.—Section Under Park Avenue.

NEW YORK RAPID TRANSIT TUNNEL.

Frogs and Switches.—All frogs, switches and other appurtenances of a similar nature, must be of such a design as to give an unbroken or continuous bearing on the main track rails, and all such devices must receive the approval of the engineer before being laid. All switches, as far as practicable, shall be laid trailing.

Fastenings.—All angle bars, bolts and nuts, washers, nutlocks, hook bolts, spikes, and other material used in connection with the track, shall be according to the plans issued by the board or as may be approved by the engineer.

Iron Piping, &c.

Under station platforms, and at such other points along the route of the railway where the presence of pipes and other subsurface structures would prevent free access to the sewer for the purpose of repairs, the sewer shall be made of iron pipe of the quality called for in these specifications for water pipe, and made with lead joints in a manner similar to that specified for the laying of water pipes.

Wrought iron rods of good quality, of the size, length and shape required for steps, are to be built in where shown on the said contract drawings.

A cast iron manhole head and perforated cover, in

dimensions, quality of iron and all other respects similar to the pattern adopted by the Commissioner of Sewers, and now exhibited at his office, are to be fitted to each of the manholes. Each manhole head and each cover is to have such certain marks or numbers cast on it as the Commissioner of Sewers shall designate.

For street manholes no head shall be used that shall weigh less than 475 pounds, nor more than 500 pounds, nor cover that shall weigh less than 135 pounds, nor more than 150 pounds. For sidewalk manholes the heads shall weigh not less than 300 pounds, nor more than 310 pounds, and the covers not less than 100 pounds, nor more than 110 pounds. When the pavement of street is asphalt, the manhole head shall be fitted with noiseless covers.

Cast iron covers weighing not less than 80 pounds and not more than 95 pounds are to be furnished for head stones. The pipe for water mains shall be 12 feet long, exclusive of hub. All the pipes shall be straight in the direction of the axis of the cylinder. The thickness of the pipes, branches and special castings shall correspond with the standards of the Department of Water Supply. The weight shall be approximately as follows: The 48-inch pipes, 8250 pounds each; the 36-inch pipes, 4800 pounds each; the 30-inch pipes, 4000 pounds each; the 20-inch pipes, 2400 pounds each; the 12-inch pipes, 1000 pounds each; the 6-inch pipes, 430 pounds each.

Proof in Hydraulic Press.—The castings must be capable of sustaining a pressure in the hydraulic press of 300 pounds to a square inch, and any casting which shows any defect, by leaking, sweating or otherwise, will be rejected. This proof will be made at the foundry, and at the expense of the contractor.

Stations.

Plans are in possession of the engineer for two styles of underground stations. One is for local trains only, and the other for local and express trains. During the progress of the work the board will issue additional plans as the work progresses, which will differ in dimensions and details necessarily according to local conditions. Stations on viaducts shall be built according to plans and specifications furnished by the board, or according to plans and specifications furnished by the contractor and approved by the board. Such plans and specifications will describe stations of the most convenient form according to the local conditions, and with an attractive and artistic appearance. The platforms shall be of the same length as for the stations underground, and the stairways leading to the same shall start from both sides of the street, or from both sides of the cross streets in the case of two sided stations located at the intersection of streets. Platforms and stairways shall be as wide as the local circumstances permit, and shall be covered for their full length. All materials used in the construction of such stations shall be of the best class as ordinarily used for such work.

Vault Lights.—The roof of the stations, where under the sidewalks, shall, to as great an extent as possible, consist of what are known as vault lights. These lights shall be made of cast iron frames, with lenses not exceeding 2 inches in diameter, of strong glass set in cement, all of design approved by the engineer; which frames shall be of sufficient strength to carry, when supported in a manner similar to that in which they are to be permanently set, an equally distributed load of at least 500 pounds per square foot without signs of failure, deformation or permanent set when such test load is removed.

Water Connections.—Both sides of every station shall have connection with the Croton water main so as to permit the attaching of hose or hoses for the flushing and washing of all parts of the station and platform, wating rooms and stairways.

Sewers and Pipes.—In certain stations it will be necessary to pass sewers or pipes, or both, beneath the station platforms, and in order to reach the same for the purpose of inspection and repair, cast iron frames capable of being lifted, of such size and design as the board may prescribe, shall be inserted in the floor, and the concrete of the floor so laid as to be exactly flush with the same.

Whenever it is necessary to suspend from the ceilings of any station or stations, pipes for the conveyance of water, gas, air, electric cables or other materials, the same shall be of wrought iron or steel in lengths of at least 20 feet between joints. The joints and manner of attaching and supporting such pipes shall be as permitted by the engineer. Water mains shall be incased in asbestos or other approved non-conducting material and all exposed mains or pipes shall be suitably painted.

Elevators.—Wherever station platforms are located at a depth or hight exceeding 30 feet from the surface of the street, the contractor shall, if required by the board, establish an approved plant of elevators not exceeding four in number, each elevator being of sufficient size to carry at least 25 persons.

Lighting.—The contractor shall submit to the board a system of lighting the stations to be approved by them before being put into operation. The lights are to be located as far as possible by being sunk in recesses in the ceiling or behind moldings, so as to be sheltered from direct observation and to furnish light by reflection. The lights must be of sufficient number, and so situated as to light the stations, platforms and bridges in a thorough manner.

Terminals.

Terminal grounds shall be located by the contractor, subject to the approval of the board, and shall be of sufficient area to permit the construction of machine repair shops, turntables and other terminal appurtenances and storage tracks having a mileage of not less than 5 miles.

Buildings, transfer and turntables and similar terminal appurtenances of a permanent character shall be constructed according to the plans and specifications furnished by the board, or according to the plans and specifications to be furnished by the contractor and approved by the board.

All buildings shall be constructed of steel, brick or other fire proof materials, and shall present an attractive appearance.

Machinery.—All machinery and other equipment in connection with such buildings or other terminal appurtenances are to be furnished and owned by the contractor along with the equipment as contemplated by the statute and called for by his contract.

Equipment.

Full and sufficient equipment, including all rolling stock, motors, boilers, engines, wires, subways, conduits and mechanisms, machinery, tools, implements and devices of every nature whatsoever, used for the generation or transmission of motive power, and including all power houses, real estate necessary therefor, or for the generation or transmission of motive power, and all apparatus for signaling and ventilation, are to be provided by the contractor at his expense, as provided in the statute.

The amount of such equipment shall be at least sufficient to supply at one time trains of three cars on the local lines at two-minute intervals, and trains of four cars on the express lines at five-minute intervals, each car having a minimum seating capacity of 48 persons.

Motive Power.—The motive power shall be electricity or compressed air, which shall be so used as to involve no combustion in the tunnels or any injury to the purity of the air in the tunnels. Provided, however, that if, in the future development of the railway art, any method of generating or transmitting power superior to electricity and involving no combustion or other injury to the purity of the atmosphere in the tunnels or in the cars shall be discovered to be practical, then the contractor shall have the right to adopt such different method if approved by the board.

Pumps.

Eight automatic pumps with a capacity of 400 gallons per minute against a head of 15 feet are to be distributed throughout the tunnels.

Every part of the railway, the stations and their appurtenances connected therewith must be so arranged that any water finding access thereto will be led away automatically to the city sewers.

Tunneling.

All tunnels, unless otherwise ordered by the board, shall be lined with concrete or brick masonry. Where tunnels are in rock and the rock is dry and free from water bearing seams, the lining may be of brick or concrete, at the option of the contractor. Where in wet ground the lining shall be of brick, of which at least one ring in the arch and one brick thickness in the side walls shall be laid in asphalt, as prescribed in these specifications relative to water proofing.

In soft ground the contractor must take every precaution which the engineer may direct by suitable shields, timbering, logging or other supports to prevent any settlement or movement of surrounding ground. Such timber as cannot be drawn out without endangering the work or the ground above shall be left in place and thoroughly surrounded by masonry or dry packing.

Manner of Prosecution.

For that portion of the route along Centre street, Lafayette place, Fourth avenue, Forty-second street, Broadway, between Forty-second street and Sixtieth street, the contractor will be allowed to conduct work by open excavation. No opening unless roofed over with timber, so as to permit the passage of vehicles and pedestrians, shall exceed in length 400 feet nor in width the distance to center of the street or the outer rail of the car track next beyond the center of the street, if such car track exists. The balance of the street must be left unobstructed for normal surface traffic. No two unroofed openings shall be within 500 feet of each other, and every cross street shall be bridged over at such opening for a width of at least 15 feet for conveying and 5 feet for foot walk except at Fourteenth street and Twenty-third street, Fifth and Sixth avenues, where the bridging for the carriageway shall be 30 feet in width and two 5-foot foot walks shall be provided.

No open excavation shall be maintained in front of any property for a period greater than 30 days unless sanctioned by property owner and board.

For that portion of the route along New Elm street, the contractor will be permitted to conduct his work by open excavation, which may be the full width of the tunnel. The contractor shall, however, maintain bridges at each cross street at least 20 feet in width, and wherever required by the board, shall so arrange his work as to give access to all property abutting on Elm street, which shall not abut also on a cross street, and not close at one time more than two adjacent blocks against vehicular traffic.

For that portion of the route under Park avenue between Thirty-fourth and Fortieth streets, the work shall be done by tunneling without disturbing the surface of the street.

For that portion of the route lying beneath the Harlem River and the approaches thereto, the work may be conducted by means of compressed air, dredging, open caissons founded on piles, or such other means as the contractor may prefer and as may be approved by the engineer. Whatever method, however, is pursued must give the tunnel a firm foundation without danger of settlement, and must during construction give a free and unobstructed waterway, for the passage of vessels, at least 200 feet in width. If necessary, the contractor must keep a channel dredged to a depth at least equal to the minimum channel depth existing in the Harlem River at the time of commencing construction. The contractor must also maintain suitable signals during both day and night and during foggy weather to indicate the position of his temporary work, and must, if required by the engineer, protect the same by guard piles. When construction is finished, all temporary piles must be drawn and all parts of caissons or other work removed, so that there will be an unobstructed depth of water over the top of the tunnel for the full width of the river measured between the established bulkhead lines, as shown by the plans.

Bidders shall specify in their proposals the estimate of the cost of the equipment of the railroad upon which the proposal is based. The equipment includes all motors, cars, whether used for passengers, freight, express or any other purpose, and all other rolling stock, all boilers, engines, wires, ways, conduits, mechanisms, machinery, power houses, all real estate upon which any such power houses shall stand, or which shall be necessary for the generation or transmission of motive power, and all tools, implements and devices of every nature whatsoever used for such generation or transmission of motive power, and also all apparatus and devices for lighting, signaling and ventilation.

Alexander E. Orr is president of the Board of Rapid Transit Railroad Commissioners, Bion L. Burrows secretary and William Barclay Parsons chief engineer.

The Parsons Steam Turbine.

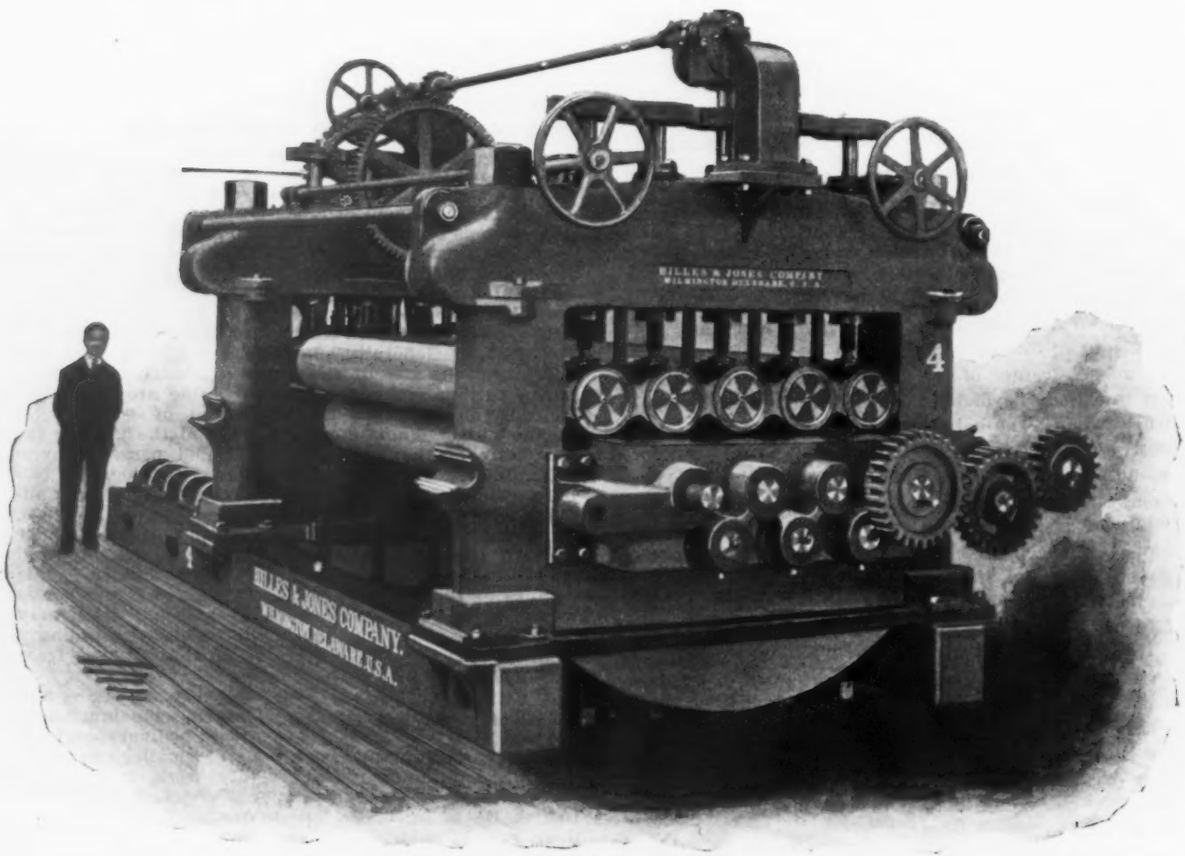
Hon. Charles Parsons described the steam turbine, of which he is the inventor, before the British Association for the Advancement of Science at their recent meeting. Mr. Parsons stated that the compound steam turbine engine had been so fully described in the proceedings of the Institution of Civil Engineers, the Institution of Mechanical Engineers and the Institution of Naval Architects that it was only necessary to refer to its leading features when designed for the propulsion of fast passenger vessels. Generally speaking, it might be said that the larger the size of the propelling machinery of the steam turbine class the more favorable are the conditions for securing the highest degree of economy in steam with a minimum of weight and the greater the simplicity of the machinery. For fast passenger vessels, and especially for cross-Channel service, the turbine system of propulsion offers great and important advantages over the ordinary screw or paddle engines. The weight of engines, shafting and propellers is under one-half that of ordinary screw engines, shafting and propellers, and under one-third that of ordinary paddle engines of the same power, so that there is much less weight to be propelled; besides this, the hull itself may be of lighter structure than is admissible with ordinary engines, owing to the absence of racking stresses from the machinery.

With turbine engines no lubricant whatever enters the steam part, so that the boilers become much less charged with oil than is the case with ordinary engines, and express water tube boilers of the smaller tube type may be maintained in satisfactory working condition for long periods; and, further, it is understood that the British Board of Trade will be prepared to so modify their system of periodic inspection as to permit of such boilers being used for regular cross-Channel service. But perhaps the most important considerations are the increased comfort to passengers, owing to the absence of vibration and a remarkable smoothness of motion analogous to that of a sailing vessel, also the greater depth at which the propellers are placed below the surface of the water, reducing the liability to racing of the engines, which enables the speed of the ship to be maintained in heavy weather in a way that is totally impossible in the case of ordinary screw or paddle vessels.

A model was exhibited in the hall of a proposed cross-Channel boat of 30 knots sea speed in moderate weather. If a service of 30-knot vessels were placed on the Newhaven and Dieppe line, it would become the fastest route from London to Paris; also, if the system were properly carried out as suggested, the time on the Dover and Calais route between London and Paris would be shortened by about half an hour, and the duration of the sea passage much reduced. The draft of water with turbine engines does not necessarily exceed that of paddle wheel vessels, and, as turbine engines are more readily and quickly manipulated than ordinary engines, and each side of the propelling machinery can be put ahead or astern independently, the maneuvering power is practically equal to that of paddle wheel propelled vessels. The particulars of the proposed 30-knot turbine boats are as follows: Length, 275 feet; beam, 30 feet; depth (molded), 13 feet 1 inch to main deck, 21 feet to awning deck; draft, 9 feet 3 inches (about); displacement, 1000 tons (about); speed, 30 knots; indicated horse-power, 18,000.

The Hilles & Jones Hot Plate Straightening Machine.

The Hilles & Jones Company of Wilmington, Del., have designed the machine here illustrated for straightening hot plates as they come direct from the main rolls. The machine was installed at the Homestead Steel Works, and the company have orders in hand from other large plate mills for similar machines. According to the best mill practice this machine is put in the regular tables conveying the plates, and they are run through the straightening rolls while still hot. As a general rule, unless the plates are very much buckled, one pass is sufficient. The machine will handle plates up to ¾ inch thickness hot. There are nine rolls, five above and four below, the lower ones only being driven. All of the rolls are 14 inches in diameter, and on the machine illustrated are 128 inches between the housings. Each of the top rolls is counterbalanced by weights to take up lost motion, so that there will be no drop as the plate runs out. The general construction is what is called



THE HILLES & JONES HOT PLATE STRAIGHTENING MACHINE.

"mill type"—that is, the housings proper are open on the top, having heavy caps in which are the screws for adjusting the top rolls. These caps are planed to fit the housings and are held in place by large bolts. As will be noticed, the machine is arranged to be driven by a pair of duplex reversing valve engines, which allow it to be handled readily in either direction. Power is taken off of the main driving gear for raising and lowering the top rolls through a friction clutch, the outside top rolls having, besides this, independent vertical adjustment. Almost all of the gearing is of cast steel. The upper rolls may also be adjusted by hand if desired. Owing to the construction of the housings and the caps above described, the caps proper can be lifted off with very little work of uncoupling and any one of the upper rolls lifted out of its place for repairs or for any other purpose. The boxes carrying the top and bottom rolls are of cast steel with bronze bushings, and the boxes of the lower rolls have a stem carried up into the cap, which forms a guide for the boxes of the upper rolls. For convenience in handling the plates a positively driven feed roll is fitted to one side of the housings; bearings are cast on the opposite side also, so that one feed roll can of course be readily attached to the other side as well, if desired. An electric motor may be substituted for the steam engine, and in some mills would be strongly recommended. It will be noticed from the illustrations that the bed plate is heavy, of box section, making a good bearing on the foundation. The hand holes allow the use of through bolts wherever it is possible to get them in, and the whole machine is fitted up for severe mill service. The same type of machine is built for lighter or heavier work, and on the smaller sizes can be arranged for driving through duplex friction clutch pulleys if the location would make this to be preferred. Owing to the length between the housings, and comparatively small diameter of the rolls proper, it is best to have these of a high carbon forged steel. By actual demonstration it has been found that this type of machine very greatly improves the character of the plates, removing nearly all of the buckles and turning them out in the best merchantable shape. This is done with scarcely any additional cost.

Blowers and Exhausters.—A recent catalogue of the B. F. Sturtevant Company of Boston describes their Monogram blowers and exhausters. This type of fan is essentially a volume fan, although designed for operation against considerable resistance. While only the standard forms of construction are shown in the catalogue, reference is made to numerous special types which can be furnished to order for specific applications. It is to a great extent the peculiar adaptability of the Monogram type that renders it of such importance as an adjunct to many manufacturing purposes. Its construction as either blower or exhauster also broadens its field of usefulness. A table of dimensions is presented which is of great advantage in arranging for the application of such a fan, while other tables relate to the movement of air and are fundamental and authoritative.

It looks as though profit sharing, as a means of fostering pleasant relations between employers and employed, was declining in favor in Great Britain, where the system has reached its greatest development. From a report issued by the British Board of Trade it appears that in 1898 there were only 85 profit sharing British and colonial firms, as against 93 in the previous year. In the case of 17 of these concerns no bonus was earned for the workers at all. In the case of the others the bonus

worked out at an average of about 11 per cent. on the wages. The system of limited liability companies, however, with the employees as shareholders, is said to be growing in favor on the other side of the water and to be yielding, on the whole, very satisfactory results.

Central Pennsylvania News.

HARRISBURG, October 16, 1899.--There is not a discordant note in the song of industry which floats above the busy mills and factories of this lower Susquehanna region. Such general prosperity has not been known in many years, if ever before. Advancing prices have apparently had no effect upon the demand or the activity of the steel and iron manufacturers. There was a fear several weeks ago that about October 1 there would be such a stiffening of prices as would inevitably result in a falling off in demand and consumption, but this apprehension seems not to have been well founded. Instead of a diminution of orders, which might reasonably have been expected under the circumstances, there has been an increase and the larger mills report even better general conditions, could such a thing be possible, than have prevailed since the upward movement started. All the mills and furnaces and forges in this district are more than busy. There are nine furnaces in operation in this district, and two about ready to put in blast at Chickies by Blair & Co. of Philadelphia. Those in blast are the five owned by the Pennsylvania Steel Company, four at Steelton and one at Lochiel; the two Paxton furnaces of the Central Iron & Steel Company, the Aurora at Wrightsville, and the Vesta Furnace at Watts Station, owned by the Susquehanna Iron & Steel Company. There has never been such activity in this section, and in view of the increased capacity of several plants the output is larger than at any time in the history of the region.

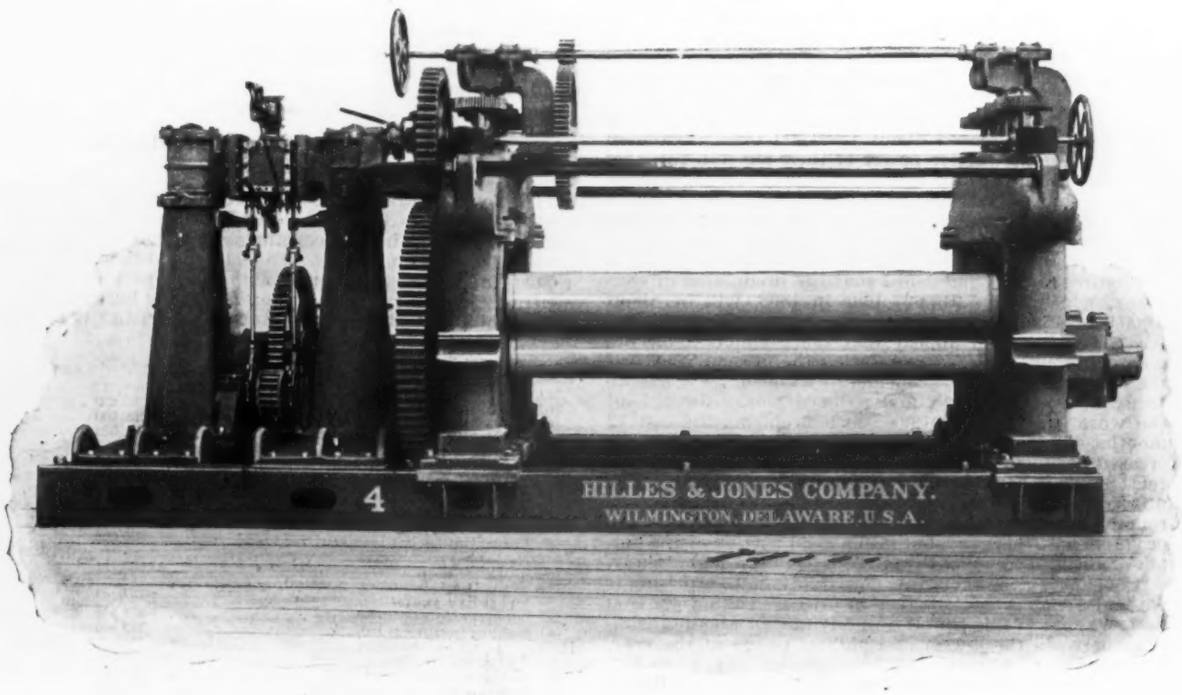
Those who are making muck bars find that the wholesale consumption of scrap has for the present checked the demand for bars. As a result they are being stacked at many places. The price of these bars has also dropped a few dollars to about $32. Every mill that could turn out muck bars has been doing so.

The Harrisburg Boiler Mfg. Company have been much embarrassed by their failure to get boiler tubes, and plates, and radiators have been held back in the most aggravating fashion since June. Now the deliveries are a little better, but still there is much delay on account of the shortage of material. The company are running full time, with orders booked sufficient to keep the plant going steadily until February 1.

The Pennsylvania Steel Company have just closed two important contracts which involve several hundred thousand dollars. One is the construction of a steel ore pier for the Cuba Steel Ore Company at a point 30 miles west of Santiago, in Cuba. It will be 1000 feet long. The same contract provides for the construction of all necessary bridges from the pier to the mines, a distance of 10 miles. It will be finished in the spring and a gang of expert bridge and pier builders from the works at Steelton will be sent to Cuba to do the work. The second contract is for a double track bridge on the New York, New Haven & Hartford Railroad. It will have a draw span of 250 feet and a fixed span of 100 feet.

The Harrisburg Pipe Bending Works are busy in every department and the outlook is more favorable than at any time since the beginning of the year. This company are building up a fine export trade. The same may be said of the Jackson Mfg. Company, who are turning out thousands of steel wheelbarrows, wire rope thimbles, &c.

Another ship laden with materials for the great viaduct on the Burmah railways in India, the big undertaking of the Pennsylvania Steel Company, is on the way, and the company expect to hear daily that the gang of bridge builders sent out several weeks ago have arrived on the ground. In spite of the fact that the works were greatly handicapped during the last week by the shortage of fuel and iron, the Pennsylvania Steel Works made an average output. The rail and other departments on construction work were particularly busy. The new electric crane in the rail shipping department is saving much time and labor.



THE HILLES & JONES HOT PLATE STRAIGHTENING MACHINE.

The Central Iron & Steel Company are making large shipments of plates for the United States Government dry docks and the torpedo boats now in process of construction at the Sparrow's Point plant. Prices continue firm and inquiries are numerous. The car famine not only delayed shipments during the last week, but also caused embarrassment through the lack of fuel and other materials. The company recently filled a large contract in China and are getting a good slice of export trade. The Chesapeake Nail Works have been doing considerable business in South Africa, which has been interrupted by the Transvaal war.

There is plenty of business for the Lucknow Forge, and the outlook is all right.

Both plants of the Harrisburg Foundry & Machine Works are in full operation. Orders are booked to keep the company hustling for a year to come. Engines are being turned out, among others, for the Charleston Consolidated Gas & Electric Railway Company of Charleston, S. C.; the New York Central & Hudson River Railway Company, the Virginia Iron, Coal & Coke Company, and the city of Braintree, Mass. Over 400 men are regularly employed.

The new 15,000-ton British battle ship "Bulwark," launched this week, has been under construction less than seven months. This creates a new record in the construction of battle ships.

An English View of the Iron Situation.

The London *Economist* prints the following editorial on the iron situation:

The third quarter of the year has passed without any sign of reaction from the exceptional prosperity which has been enjoyed by the iron and steel trade for some considerable time past. All the indications are quite in the opposite direction, for, notwithstanding the increased production throughout the world, there still appears to be a large and unsatisfied demand, which it is probable will task all the energies of the trade for some considerable time to come. What surprised and deceived so many was the unexpected and extensive development of this demand. During the year 1898 the United States of America, although producing 1,000,000 tons of pig iron less than in the present year, was able to spare about 600,000 tons for export to other countries. Now America is able to absorb the whole of her present production of 13,000,000 tons, and grudges the loss of such iron as is exported to fill orders taken some time since, and is no longer a seller for export. Considering the fact that stocks have been reduced in America at least 600,000 tons, it would appear that the consumption of the United States alone must lately have increased at least 2,000,000 tons. This is a condition of things so exceptional as to account for all that has happened during the present year. To a lesser extent a similar expansion has been going on both in this country and Germany. Great Britain produced 8,631,151 tons of pig iron in 1898, and it is estimated that the production of the present year will be about 9,500,000. If one takes into account the reduction of stocks and the imports of pig iron, it may very fairly be assumed that the consumption of pig iron in England has increased about 1,000,000 tons. Again, in Germany the productive power of their pig iron furnaces has been strained to the utmost to supply the exceptional demand, but this being insufficient, they have drawn largely from this country such pig iron as they required for their rolling mills, all of which have been full of orders for many months past. It appears probable from the figures already published that the production of Germany, which was 7,215,927 tons in 1898, will be about 8,000,000 tons in 1899. Taking these three leading countries only, it would appear that the production has increased about 2,800,000 tons during the present year, but the consumption is still considerably ahead, as it has already absorbed all this, and reduced stocks throughout the world probably by 1,000,000 tons during the last 12 months. There is no evidence, therefore, that this increased production has reached the point which must affect prices when there is a surplus which has to be pressed for sale. To-day there is an urgent demand all round for pig iron, and it is understood that not only the production of this year, but also a good portion of the output of the first few months of 1900, has been sold already.

Considering the facts just stated, it is not surprising if we find a very smart advance in prices. Taking pig iron first, we find in this country an advance of about 25 shillings between the lowest and highest points of the year. In America the advance has been greater, say, $8 to $10. Manufactured iron and steel has risen 30 to 40 shillings per ton. In America steel rails are $10, and steel billets $16 to $18 higher. Steel rails advanced about 35 to 40 shillings in England.

The tin plate trade was affected not only by the improvement in iron, but also in tin, and in consequence it experienced an advance quite unprecedented. Since January 1 tin rose from £87 to £148 per ton, and this advance alone represented 1 shilling 6 pence to 2 shillings 6 pence increased cost per box. Considering the advance in iron it is not surprising to find that tin plates rose 5 to 6 shillings per box, say, from 10 shillings to 10 shillings 6 pence to 15 shillings and 15 shillings 6 pence, f.o.b., Wales. Although the Board of Trade returns do not show any increase in shipments of tin plates, the quantity of black plates (for tinning) shipped is constantly increasing, the figures for 1899 (eight months) being 20,000 tons in excess of 1898. The fact that there are now 390 mills at work, as against 290 mills same time last year, is proof that the volume of trade largely increased during the last 12 months.

In considering the future prospects of the trade, there are several points which deserve consideration. It may be fairly anticipated that, with the profitable prices now ruling, every effort will be put forth to increase the production of pig iron; but it must be borne in mind that there are no inconsiderable difficulties in the way. In America it is feared that when winter comes on it will be found difficult to obtain the greatly increased quantity of ore necessary to keep all the present furnaces going, and it is already indicated that the cost of transport on Lake Superior may be considerably increased owing to the difficulty in procuring the additional tonnage which is required. In this country the reported increase of 350,000 tons for the first six months of this year is more apparent than real, as, owing to the strike in South Wales, there was a reduction of 150,000 tons in the production of 1898, as compared with 1897. Owing to the great difficulty of getting an increased supply of coke, many furnaces are kept out of blast which otherwise might be working, and in July of the present year there were 404 furnaces in blast, as compared with 379 same time 1898—this is only equal to an increase of about 600,000 tons annually. Another factor which may affect the trade both of America and this country is the question of wages. There has already been some increase, but this is not at all proportioned to the advance in prices, and it is just possible there may be some difficulties with labor. Coal has advanced, but not at all as it did in former periods of activity in the iron trade, and higher prices are quite probable. Colliers are to receive an advance of 2½ per cent. this month, but it is highly probable that at the end of the year they will make a demand for at least a further 5 per cent. In this way the cost of production is gradually rising, and approximating to the higher prices now ruling.

It is assumed by many that the smart advance in prices must seriously affect the consumption of iron and steel, but there is so far but little evidence of this, as even shipbuilding orders, which were held back, are now being given out more freely. The experience of 1872-4 shows that after a time dealers become accustomed to the higher prices, and trade goes on pretty much as usual. The increasing use of iron and steel in many new forms, notably for structural purposes of all kinds, coupled with the expansion going forward in many countries, justifies us in expecting a continuance of active trade for a good while to come.

Subsidies to the Merchant Marine.

The following table shows the current annual expenditures of the maritime nations of Europe and Japan, so far as they have been ascertained, in behalf of their respective merchant navies. The latest available official reports and reports of steamship companies and mail contracts, copies of which are on file in the bureau, have been used. The statement is not complete, but it is believed to be accurate as far as it professes to go:

Great Britain		$5,762,572
(a) Mail contracts and mail pay, 1898	$3,666,442	
(b) Colonial mail contracts, 1899	765,450	
(c) Mail contracts not ascertained, 1899 (about)	100,000	
(a) Admiralty subventions, 1899	316,323	
(a) Retainers to merchant seamen, 1899	606,853	
(c) Refunds to British ships with apprentices, 1899 (about)	150,000	
(a) Canadian fishing bounties, 1897	157,504	
Germany		1,894,620
(b) Mail subsidies, 1899	$1,544,620	
(c) Transatlantic mails (about)	350,000	
France		7,632,242
(b) Mail subsidies, 1899	$4,655,791	
(a) Navigation bounties (annual average for past five years)	1,863,469	
(a) Construction bounties, 1897	993,142	
(a) Fishing bounties, 1897	119,840	
Italy		2,185,266
(b) Mail subsidies, 1899	$1,679,985	
(a) Navigation bounties, 1897	394,557	
(a) Construction bounties, 1897	110,724	
Russia		1,168,187
(a) Subsidies, 1899	$1,065,187	
(c) Refund Suez Canal dues, 1895	103,000	
Austria-Hungary		1,724,249
(b) Mail subsidies, 1899	$1,724,249	
Spain		1,629,927
(a) Mail subsidies, 1896	$1,629,927	
Portugal		63,300
(a) Mail subsidies, 1898	$63,300	
Netherlands, 1898		259,971
(a) Mail subsidies	$259,971	
Norway		136,948
(a) Mails and subsidies, 1899	$136,948	
Sweden		31,844
(a) Mails, 1898	$31,844	
Denmark		82,455
(a) Mails	$82,455	
Japan		3,492,107
(a) Mail subsidies, 1899	$3,316,482	
(a) Construction bounties, 1899	138,625	
(a) Fishing bounties, 1899	37,000	
Grand total		$26,063,688

(a) Government report or statute. (b) Steamship report or contract. (c) Estimate.

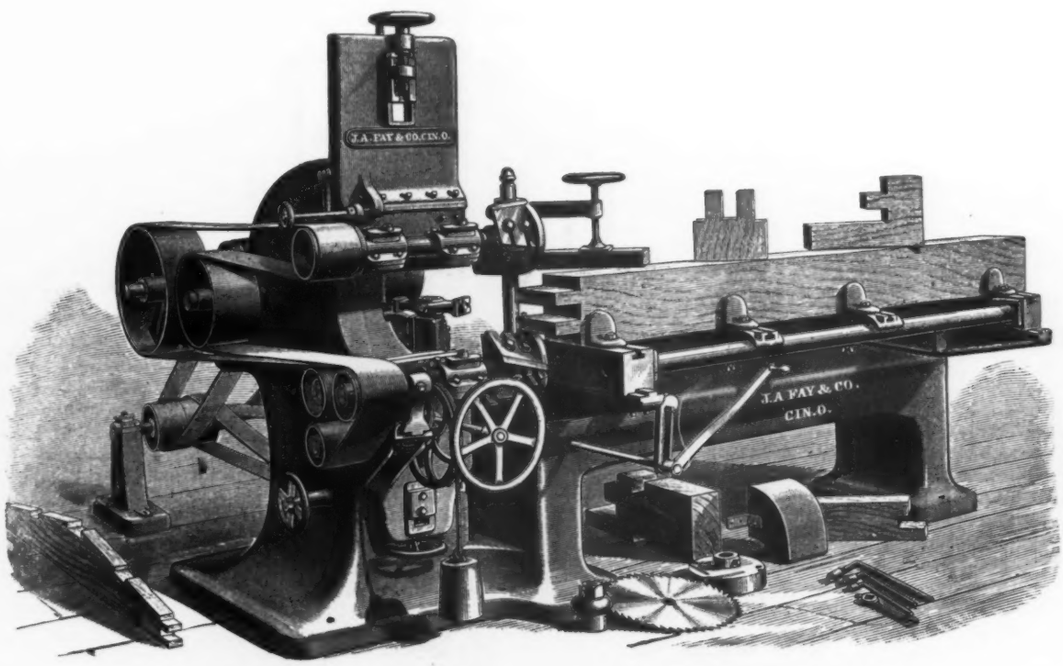
Complete figures for the current year would increase the total of $26,063,688.

For the fiscal year ended June 30, 1898, the United States paid for ocean mails to American vessels $1,038,141.

The chartering by the British Government for transport purposes of a large number of steamers engaged in the trans-Atlantic trade has caused a sharp advance in freight rates, which will probably be marked up still higher as the season advances. A scarcity of tonnage is already being felt on the Atlantic coast, and the condition is likely to become more acute.

The Fay Universal Car Tenoning and Gaining Machine.

The machine here illustrated is intended for making all kinds of tenons on heavy timbers required in car and bridge building; it can also be used for cutting gains on heavy pieces and for cutting off purposes. The form of the machine is that of a goose neck, with a deep gap formed across the column for the passage of timbers endwise between the cutter heads. The column is cast in one piece, as is also the bed upon which the carriage works. The machine will make single or double tenons and, with a gaining head upon the top spindle, do all kinds of overgaining; by placing a gaining head upon the lower spindle overgaining may be done; or by extending through the gap of the machine will cut on any portion of a timber that may be required. By substituting a circular saw for the lower cutter head it may be used for cutting off. The machine has another head mounted upon a vertical spindle in bearings gibbed on the inner side of the column in the rear of the tenoning heads, for producing double tenons. This head is adjustable up and down, and is arranged to cut to a line or point coincident with the cutter plane of the lower tenoning head. The tenoning heads run on steel shafts 1 11-16 inches in diameter, which are mounted in self lubricating bearings cast to a cross slide, which is gibbed to the face of the column above and below the gap. They carry wide knives, and will cut tenons up to 6 inches at one operation, or, by repassing the material, any length of tenons desired can be made. Both have a vertical motion, simultaneous or independent, while the upper cutter has an additional end adjustment for making one tenon longer than the other. The cutter heads are belted by a system which secures an open gap for the passage of long timber. The carriage is self operating, being driven by a screw actuated by friction gears, the simple pressure of a lever causing it to travel in either direction, or it can be instantly stopped. On heavy timber and long work power feed is desirable. On short work it can be disengaged, and the carriage operated by hand. The countershaft which drives the spindle for cutting the vertical tenons is placed in the rear of the machine. The builders of this machine are J. A. Fay & Co. of Cincinnati, Ohio.



THE FAY UNIVERSAL CAR TENONING AND GAINING MACHINE.

Gustav Lindenthal, the well-known engineer, concludes a series of very interesting articles on Steel Foundations for Steam Railroad Tracks in the *Railroad Gazette*, with the following summary: "1. That steel ties in place of wooden ties do not offer sufficient economical advantages. Reduction of expense for track maintenance over that on wooden ties is either absent or too slight and uncertain. The safety of track not much greater, the riding not more comfortable. Good steel ties cost about $5000 more per mile than wooden ties without saving at best more than the interest on the additional cost. 2. That longitudinal steel sleepers, with no more metal per mile than steel cross ties, offer greater bearing area on the ballast, greater longitudinal rigidity, superior smoothness and safety of track, least amount of creeping and greatly reduced expense for maintenance. Steel sleepers also cost about $5000 more per mile than wooden ties, but the saving in maintenance will yield at least 10 per cent. on the additional cost. 3. Concrete as a foundation directly under the rail is too brittle and if designed to be on a par with steel sleepers, for durability, continuity and smoothness of track, would be too expensive, and sometimes entirely impracticable."

About January 1 next a system of door to door mail registration will be introduced, in connection with certain post offices of various grades in different parts of the country, which, it is expected, will not only prove a great convenience to the public at large, but add materially to the revenues of the United States Post Office Department. In the last fiscal year 15,000,000 pieces of registered mail matter were handled by the Department, bringing in a revenue of nearly $1,000,000. When the new system is instituted, it is believed that the revenues will be doubled by the end of the first year of its operation. If successful in the trial districts, the extension of the new system to all parts of the country will be made as fast as possible.

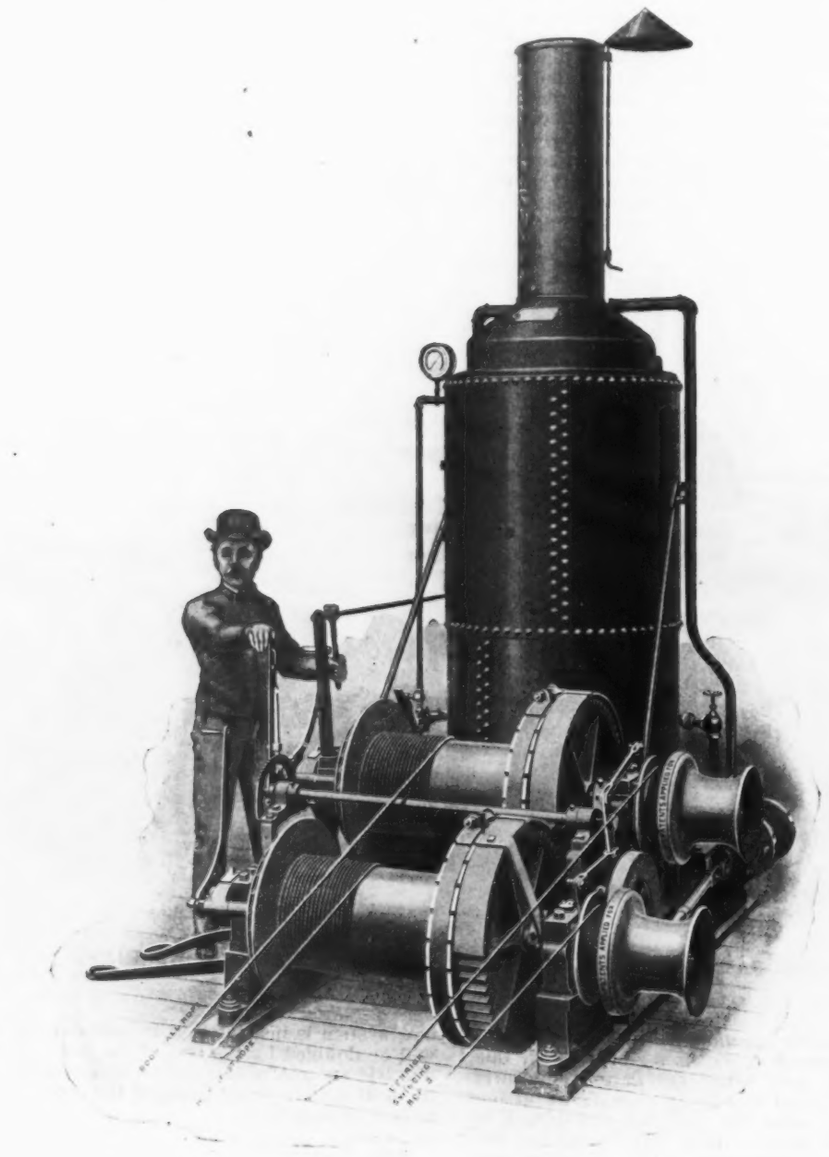
The Citizens' Enterprise Company of Muncie, Ind., have gone into the hands of a receiver to be wound up. This is the company so largely instrumental in adding to the industries of that city. Eight years ago nearly 2000 property owners banded themselves together and donated sums ranging from $10 to $15,000, making a fund of $216,000, which was used in building up the city by locating big glass, iron, steel and wood working concerns. The location of the factories has been instrumental in increasing the population of the city from 11,000 to 30,000, and all that had been hoped for has been realized. The assets are $12,000, with $10,000 liabilities.

A decision of considerable importance to the electrical interests was handed down last week by Judge McPherson in Philadelphia. The case was brought by the Tesla Electric Company against the Scott & Janney Company, and involves the patents of Nikola Tesla, embodying the principle of the polyphase motors, which are so important in all long distance power transmission schemes. The opinion of Judge McPherson was broadly in favor of the Tesla patents. These patents are owned and controlled by the Westinghouse Electric & Mfg. Company of Pittsburgh.

The Lidgerwood Derrick Engine With Simplex Swinging Gear.

The engraving shows a hoisting engine brought out by the Lidgerwood Mfg. Company, New York, which will be known as their "99" derrick engine with simplex swinging gear. It is of the standard Lidgerwood double drum type, with a patented attachment for swinging the boom of a derrick. The small friction drums which are used for the derrick swinging ropes are placed inside the winch heads and occupy very little space, leaving the winch heads available for use the same as with an ordinary double drum engine. Both these swinging drums are actuated by a vertical lever, arranged with a detent and quadrant, so that the lever may be applied and held by the detent in its position, without further attention on the part of the operator. The device is thus easily handled, and the operations of hoisting the load, raising and swinging the boom can all go on simultaneously with practically no more trouble than in handling an ordinary double drum engine. The winch heads are secured to the shaft by a sliding key or feather, and are of special form, having a sleeve upon which the swinging drum revolves; and a very powerful form of friction is used between the swinging drum and the winch head, so that the full power of the engine can be used.

The frictional contact is produced by cams placed between the swinging drums and the frame of the engine, while collars with anti-friction washers are placed on opposite sides of the frame to take up the thrust. The operating cams are connected by links to the end of a lever, which is carried on a rock shaft extending across to the side where the operator stands, and where the vertical detent lever for operating the swinging device is placed. In the operation a rope is wound on the bull wheel of the derrick, and is secured to the same in the center. Each of the two ends is secured to one of the two swinging drums, enough rope being wound on each to give the required amount of motion to the bull wheel. By throwing the lever forward it engages the friction clutch on that winch, causing it to rotate and winding in the rope, which turns the boom in one direction, the other winch meanwhile paying out the rope, as the cams are so constructed that the same movement which engages one friction disengages the other. By throwing the lever forward the friction of the rear friction drum is engaged, and the forward friction drum is released. Thus the boom can be pulled in either direction. The cams operating the frictions are so constructed that when the operating lever is in its central position there is enough frictional contact in the swinging drums to keep the ropes taut, and therefore when one swinging drum is winding in the rope the other drum has sufficient friction to prevent the rope which is paying out from overrunning. The means of adjustment is very simple, consisting of a nut on a stud bolt in the outer end of each winch shaft. The construction of the friction is such that there is very little wear, and when the parts are worn they may be replaced easily without impairing the main parts of the device whatever. The advantages of this swinging gear are apparent; it occupies a small amount of space, does not add much to the weight of the engine, can be operated with very little exertion and requires very little



THE LIDGERWOOD DERRICK ENGINE WITH SIMPLEX SWINGING GEAR.

time in its operation on account of the detent lever, which holds itself in whatever position placed. One of the most important features lies in the fact that it can be placed upon any of the Lidgerwood standard double drum hoisting engines, either with or without boiler.

The Huxley Valve Remodeling Device.

The valve remodeling device made by the Quincy Valve Mfg. Company of Quincy, Ill., is in no sense a refacing or regrinding machine. It provides for the insertion of a new seat, or in other words a bushing, and there is no constant removal of metal, with the ultimate result of rendering the valve useless. Only one operation of the machine is necessary to renew the valve, later repairs being made by substituting new seats. The device will operate upon the seats of globe or angle valves from ⅝ to 6 inches. The valves can be bushed without disconnecting them from the pipes, and globe valves can be operated upon from either end. The valve is remodeled by boring out the seat and then tapping the same to receive a new bushing or seat, which can be replaced as often as required. The No. 3 machine has universal face plates for flange valves, and also an

THE HUXLEY VALVE REMODELING DEVICE.

extra feed head with ⅞-inch spindle complete for boring and tapping large size valves, making this a complete machine up to 6 inches.

The National Light & Power Company were incorporated, at Trenton, N. J., on May 3, with a capital of $15,000,000, all of one class and in $100 shares. The prospectus now issued states that the company control a chemical product discovered in August, 1898, which will "generate the electrical current at a nominal cost. Enough of the product may be put into capsules, and carried in the vest pocket, to recharge a battery." Applications for numerous patents have been made. The directors are M. M. Belding of Belding Brothers Silk Company, New York; E. L. Fuller, president Retsof Salt Company, New York; T. H. Watkins of Simpson & Watson, coal shippers, Scranton; M. D. Valentine of the Valentine Brick Company, Woodbridge, N. J.; E. S. Savage, lawyer, New York, and John Post, the inventor of the battery. The office is at 10 Wall street, New York.

The organization of large combinations is a source of considerable revenue to the Government. All deeds must be stamped, and the larger the consideration named in the deed the larger the amount of revenue stamps required. During the past couple of weeks the Union Trust Company of Pittsburgh have handled the funds of three large consolidations made in Pittsburgh, and have paid to the Government $74,435. The first issue of the stock of the Pittsburgh Coal Company required $44,800, the Monongahela Consolidated Coal & Coke Company $20,000 and the American Window Glass Company $8500.

Exhibits at Philadelphia.—I.

We have had occasion to refer repeatedly to the exhibition now being held in Philadelphia under the auspices of the Franklin Institute and the Philadelphia Museums. As already stated, there are quite a number of excellent exhibits of firms prominent in the iron, steel, machinery and metal trades. The following brief review deals with the characteristics of some of them:

J. B. & J. M. Cornell,

New York, are showing Poole's patent pressure blowers. A No. 3 blower is in operation, driven by an electric motor. The steadiness of the blast is demonstrated by a ball of wood which remains in the air some distance from the point of discharge and excites the curiosity of passers by. Other sizes of blowers are also shown, as well as a specimen of the bearing used in them. The latter, which is described as a spherical ring lubricated bronze sleeve adjustable bearing, is exhibited with its casing cut open to admit of inspection in detail. The smallest blower made by the firm, 13 inches high only, is given prominence in the exhibit, and is of the same type as that now being furnished by the concern to the New Amsterdam Gas Company of New York, and 10 feet in hight. A nice line of metallic office furniture for use in fire proof buildings is also exhibited as one of the firm's products.

R. D. Wood & Co.,

Philadelphia, have an exhibit, but owing to the bulky nature of their products, the use of their exhibition space is somewhat limited. A large section of water pipe is shown, 5 feet in diameter, and weighing 12,000 pounds. On the pipe is a card bearing an invitation to visitors to take a walk through the pipe, an invitation which is accepted by many. Hydraulic valves, gate valves, hydrants and special pipe fittings are also shown, with a collection of photographs illustrating some of the gas holders built by the firm.

The Main Belting Company,

Philadelphia, have a nice exhibit of their Leviathan belting, which is said to be water, heat and steam proof. While the belting has been on the market a considerable time, and has become very well known in all sections, a liberal quantity of samples is provided at the exhibit for distribution to foreigners and others not familiar with it. At the entrance to the exhibit are two columns constructed of rolls and belting of different sizes. At the top of the columns, and forming an arch, is the company's sign, consisting of a strip of wide belting, with appropriate lettering thereon in gilt. In the center of the exhibit is a roll of 90 inches eight-ply Leviathan belting, supported on the top of a small pyramid fashioned from rolls of belting, and crowned with a gilt eagle with wings outspread.

The Illinois Steel Company,

Chicago, Ill., have a very extensive exhibit covering the line of plates, shapes, cement and other materials manufactured by them. Quite a lot of flanged plate work is to be seen in the exhibit, but this is merely to demonstrate what the company's plates will stand, the flanging having been done by firms making a specialty of such work. Among the specimens to be seen is a Berry boiler head, made from a ½-inch flat plate 125 inches in diameter and dished to 108 inches. As illustrating the capacity of their plant for rolling large plates, the company show a locomotive fire box plate, 300 x 120 inches, ⅜ inch thick. Ship plates, tin plate bars, wire rods, structural work, iron railing, axles, steel rails, track and other bolts, spikes and track materials and appliances. The Bonzano improved rail splice is a new device shown among the track materials. Four double fronted showcases are arranged along one side of the exhibit, containing sections of the different shapes rolled in the works and test specimens of their different productions. On the tops of these cases are arranged glass jars, holding samples of slag in its different mercantile forms, and the ores used in the blast furnaces. In the center of the exhibit is a large model of one of the company's blast furnaces shown in section and disclosing behind a glass pane the method employed in charging the furnace and the arrangement of the different layers of materials. As indicative of the capacity of the cement works operated by the concern, a monster barrel capable of holding a 22-ton carload of Portland cement, this tonnage being the output of the works every hour. The cement is also shown in barrels and bags in piles around the large barrel. At the entrance to the exhibit, and forming an arch, is a roof truss, said to be one-fifth of the size of the smallest truss made in the structural department of the works.

The Reading Iron Company,

Reading, Pa., are exhibiting a very large assortment of wrought iron tubes, boiler tubes, bent tubing and pipe

fittings. The tubes are in commercial lengths, and are arranged on racks, the larger sizes at the bottom and the other tubes diminishing in diameter until a pyramidal form is reached. A circular stand carries a number of specimens, covering the shapes, bars and other products of the concern. Specimen pigs of iron and samples of the ores used in the same are also exhibited. The railing around the exhibit is made of tubing throughout, the panels beneath the top rails being composed of tubing bent into a pleasing design.

The Royersford Foundry & Machine Company,

Royersford, Pa., have on exhibition the latest pattern of the combined punch and shearing machine which they make. The machine is designed for use in general jobbing and machine shops, blacksmiths' and fence makers' establishments. It appears to be heavy and substantially built, and is provided with clutches to operate with both lever and treadle. The shaft is in two parts, so that either part of the combination may be run separately from the other when required. Only one size of the machine is shown, but it is explained that it is made in three sizes, No. 1 to shear 6 x ¾ inch flat iron and 1¼ inch round; and to punch a ⅝-inch hole through ¾-inch iron. If desired, this size can be made to cut 8 or 10 inches wide. No. 2 is a more powerful machine, shears 6 x 1 inch flat and 1½ inch round iron, and punches a 1-inch hole through ¾-inch iron. Their No. 3 is their most powerful machine, shearing 10 x ¾ inch flat and 2 inch round iron, and punching a 1¼-inch hole through ¾-inch iron.

The Ferracute Machine Company,

Bridgeton, N. J., show a large line of cutting, drawing and coining presses, punches, dies and press tools, all run by electric power. The coining and drawing presses appear to attract much attention from all classes of people, and each day's product, in the shape of metal souvenirs, is carried away by interested visitors. Souvenir medals and plates commemorative of Dewey's home coming have been in good demand and as good supply.

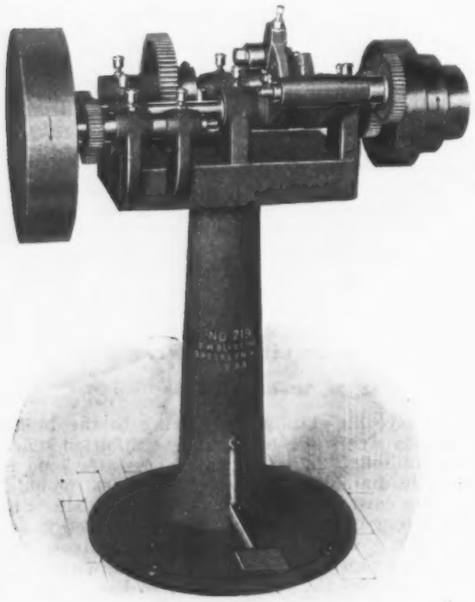
The Sterling Bench Grinding Machine.

The No. 0 bench grinder or saw gummer made by the Sterling Emery Wheel Mfg. Company of Tiffin, Ohio, is intended to meet the demand for a cheap emery wheel grinder to be used in saw mills and wood working shops. The base is 12 inches in diameter and carries a spindle 13 inches long by ¾ inch in diameter. The hight from the bench to the center of the spindle is 8 inches. The diameter of the flange is 3½ inches and of the pulley 2½. The machine weighs 27 pounds and will carry wheels of any diameter up to 12 inches.

Operations have been resumed at the J. W. Johnson iron ore mines, near Buck, Lancaster County, Pa., after many years of idleness.

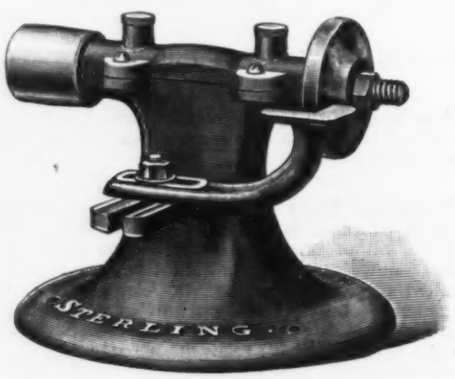
New Bliss Automatic Screw Machine.

In the accompanying half-tone we illustrate a new machine which has been brought out by the E. W. Bliss Company, 11 Adams street, Brooklyn. This machine is for making sheet metal screws on caps, covers, &c., such as are shown in the smaller illustrations. From 1500 to 1800 pieces can be threaded per day of ten hours, and in many cases the cap and the screw on which it fits may be threaded at the same time, thus doubling the output. The chucks are of simple and durable character, easily adjusted and replaced to suit the work. The working of the machine is very simple. The threading device consists of two steel chucks on which is cut the shape of the thread desired. The cap which is to be threaded is placed upon the lower chuck. After this has been done, the operator depresses the foot treadle, starting the machine, which is timed to run just long enough to thread the cap. These chucks revolve in such a relation to each other that the slightest resistance on the cap will cause it to quickly unscrew itself and free the chuck, ready for another shell or cap. This same style of machine can also be used for beading and knurling. In some instances the shells are of such a shape that threading and beading are done at the same time.



Specimens of Work.

THE BLISS AUTOMATIC SCREW MACHINE.



THE STERLING BENCH GRINDING MACHINE.

The John King Metal Company of Elizabeth, N. J., have been incorporated, with a capital of $125,000, to conduct a general Metal smelting business. The incorporators are Walter C. Childs and Wm. G. Woolfolk, Jr., of New York and Thomas Miles Day, Jr., of Plainfield, N. J. The company will build their plant at Garwood, N. J.

The Iron Age.

New York, Thursday, October 19, 1899.

DAVID WILLIAMS COMPANY, - - - - - - PUBLISHERS.
CHARLES KIRCHHOFF, - - - - - - - EDITOR.
GEO. W. COPE, - - - - - - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - - - - - HARDWARE EDITOR.
JOHN S. KING, - - - - - - - - BUSINESS MANAGER.

The Enormous Volume of Business.

The freight car famine grows worse instead of better. Railroad systems having the reputation of being the best equipped are unable to supply the demands of their patrons, and other roads are of course rendering still poorer service. It is related of a Rocky Mountain railroad company that a demand was recently made on them for payment for a considerable number of cars by a car building company, who had been sending the cars forward as completed, to which reply was made that when any of the cars were received payment would promptly follow. Investigation showed that every car had been taken by some one of the railroad companies into whose care it had been intrusted and used for the shipment of freight, so that all of them were scattered throughout the country, with little hope of their recovery for months. When such things are done, the supply of cars is indeed short. The lack of sufficient cars is not only annoying to distributers of merchandise, but is causing much embarrassment to manufacturers. Supplies of fuel and raw materials run short and valuable time is lost waiting for them, with customers pounding vigorously for better deliveries of finished products.

But the shortage of cars is not the only trouble encountered in railroad service. At great railroad centers like Chicago, having apparently no lack of facilities for expeditiously handling freight, the traffic is far in excess of the means of disposing of it. The activity in railroad yards is described as at times verging on demoralization. With switching crews working with the utmost diligence, cars are poured in on them so fast that it becomes difficult to keep tracks cleared. More men are being employed than ever before in handling freight in railroad warehouses and in making up freight trains, but the work to be done is so much beyond their power to dispose of it that the supply of men also appears short. The pressure on railroad facilities in their freight department, in fact, could hardly be greater if some emergency confronted the nation and the Government was straining every muscle to prepare for it.

No such emergency exists, however, and no sudden demand has been precipitated on the country by foreign developments. The volume of business on the railroads is one of the natural results of the great activity in all branches of trade which is now being enjoyed. In every direction the volume of business in the United States is surpassing all records. Wholesale merchants were never before blessed with such a trade, the production of all kinds of manufactured commodities was never before on so grand a scale, our foreign commerce is running in excess of any previous year. It is no wonder, therefore, that transportation facilities prove inadequate under the steadily increasing expansion of general business. And inasmuch as this expansion promises to continue, it is to be expected that railroad companies will be large purchasers of all kinds of equipment to enable them to render more satisfactory service. They will also have to increase their terminal and transfer facilities to correspond.

A Possible Mistake to be Avoided.

Certain recent demonstrations of the capacity of American industrial establishments to meet foreign wants promptly and on a large scale appear to have occasioned surprise abroad. Because we were occupied so long with laying out farms and railways and cities, apparently with no thought of the outside world, foreign observers failed to detect that the industrial and mechanical development which went on at the same time, to supply our domestic wants in manufactures and in materials for railway and other constructive work, combined with the enterprise and confidence and capital which our people were acquiring meanwhile, might some day place the United States in a position of importance in relation to the export trade of the world. Because we had not, up to a certain time, produced steel rails, high class cutlery or tin plate, it was assumed that we never would do so; in fact, that we could not. Because we had built no great modern ships, the possibility of our doing so appears not to have been considered abroad. Even when our navy had been reconstructed on modern lines, with ships and armament all of American production, full recognition of the progress that had been made was delayed until the new navy had been tested in actual warfare, and was not found wanting.

It is possible for a mistake to be made in America regarding current progress in some other parts of the world with which it might be desirable for us to have trade relations. At home we have seen such great industrial developments proceed rapidly from small beginnings—hand in hand with the growth in our agricultural resources, the expansion of railways and the general increase of wealth here—that our people naturally have come to feel that they have the capacity for whatever they may wish to do. Likewise it may have occurred to some of them that if the youngest of the great powers of the world has accomplished so much, it must imply superiority over the older countries in industrial and commercial affairs. Feeling thus toward the most advanced of foreign nations, it could hardly be expected that any comparison with half civilized countries, or worse, would be entertained.

Yet it is with respect to the undeveloped parts of the world that our people are in the greatest danger of making a mistake. Not that the native population of Africa, for example, is likely to figure in competition with our own race in any department of progress. But Africa is no longer controlled by Africans. That part not owned absolutely by European powers is embraced within their "spheres of influence." Hence it is European capital, under the direction of European enterprise, that establishes steamship lines and submarine cables to what was so lately an unknown "dark continent;" that opens mines there for gold and diamonds of unequaled richness; that navigates the interior waters with steam, and builds railways and erects telegraph lines; that gathers the forest products and effects their exchange for manufactured goods on a basis which affords a profit at every stage of the trading. No question is involved of progress on the part of the African. He is capable of work and he is being made to work—by the offer of goods, if that will tempt him; by force, if it does not. In any event there is a growth in the volume of exports and imports of that continent, in the traffic of ships and trains, and in the profits of traders there.

The development made in the United States was never due in any sense to the natives whom the white man found here, but has occurred in spite of them. This whole country has had to be repeopled from the outside, both with directors of labor and of enterprises and with

the laborers. There are other sections of the globe where large native populations already are industrious and productive, or are in a position to become so under adequate direction. Besides, the natives of parts of Africa and Asia can be converted into consumers of manufactured goods to an extent which would have been impossible with our Indians. If the native populations alone are to be considered, of course, the development of the countries now being opened to trade would be too remote to be of interest to us. But, as already mentioned, it is the European who is furnishing most of the means for development—the capital being in part what was invested once in American railway and other enterprises, but was withdrawn when our people became able to own their own roads. Besides, Europe is more disposed to-day to invest money in new countries with a prospect of controlling their trade, than in a country like our own, whose home people are likely to control the best of the home trade in whatever line.

There may be reasons why any given concern should confine its energies at home, instead of seeking an export trade. The immense population here and its large consuming capacity are growing all the while, and promise for a long time to come to offer a wider market than can possibly exist for us abroad. Still it is desirable that we should both retain the export trade which we possess already and add to it whenever possible. In order to do this it will be necessary to pay close attention to all competitors, taking care not to underrate the progress in development of the newer markets of the world, and thereby permit other nations to capture those markets, to our own exclusion. We must not depend for knowledge of conditions in those remote countries upon the authorities of former years; their progress needs to be studied every day. There are people looking for trade opportunities who are as anxious to get into every new market that may be opened anywhere on the globe as land grabbers have been to locate claims in our own Western States whenever another Indian reservation was thrown open to white settlers. We cannot afford to be indifferent to whoever may be first in a new field, with the idea that we are certain to get a foothold there in due time anyway.

Supplies of Metallic and Paper Money.

There is a little disposition, especially in London, to exaggerate the effect which the interruption of gold supplies from Johannesburg must have upon business. This interruption has only just occurred; the tightness of the money market, the advance in the discount rates at all the European monetary centers took place before the Transvaal war began, and must be accounted for by commercial reasons. These are furnished by the great increase in the amount of business throughout the world and the rising level of prices, together with a very decided increase in the amount of speculation, including under that head the overcapitalization of industrial concerns. All this happened at a season of the year when the leading farm crops must be marketed and there has naturally been an abnormal demand for money. The interruption of gold supplies from South Africa will have some effect in increasing this stringency, but it is very easy to exaggerate it. The supply of gold in the world is very largely in excess of what it used to be. Money will soon begin to flow from the South and West to New York. This will obviate the danger of New York drawing on London and Berlin, and if the purely speculative operations be checked the injury will not be without its compensations. This country has more gold than it ever had before and could meet a considerable demand from Europe without discomfort if the agencies of credit were properly utilized for meeting exceptional demands for currency, which seldom last long and generally occur in the early fall; the present one must have about reached its limit.

In discussing this situation, the London *Statist* makes the interesting observation that there was lately an extraordinary expansion of trade in Germany, a great creation of new companies, and wild speculation, an exaggeration of the precise conditions we have had here. But "the German banking law, which allows the Imperial Bank to issue notes to any amount it pleases in excess of the authorized circulation, and the gold held, on condition that it pays 5 per cent. duty to the Government, enabled that institution to give all the accommodation that was required without raising its rate above 6 per cent." We ourselves have no such elastic provision. The national bank law is not favorable to an increase of circulation; there has of late been some increase, but very little; the general tendency is the other way. The Government currency cannot be increased without legislation, and therefore cannot be increased to meet a particular commercial demand. If increased, the amount would be fixed arbitrarily, by politicians, instead of automatically by the banks that are carrying on the financial operations of the country, who know the demand and the amount of it and whether it is for purposes of speculation or of legitimate trade. Practically there is no variable element in our currency except the gold, which may come from Europe or Australia, or go to Europe or elsewhere. It can hardly do either without some disturbance of business. An increase of bank currency, which could be made when needed, and which would not exceed the demand, and would promptly retire when the occasion for it had passed, would in great measure obviate the alternations of redundancy and stringency from which the money market is now doomed to suffer.

Next Year's Lake Freights on Ore.

The campaign for next season's ore carrying trade in the great lakes is opening early. Important developments have occurred during the past week. Skirmishing between the Rockefeller and Carnegie interests is reported to have resulted in favor of the former, who outbid the latter in contracting for the use of a large number of vessels to carry ore throughout the season. The Rockefellers are now stated to have under their control no less than 67 steel vessels, and are able to establish a rigid rate. Ore shippers generally are contracting at rates proportioned on $1.25 from the head of the lake. The Carnegie Steel Company, who are by far the largest consumers of ore, are obliged to use a considerable part of the lake tonnage owned or controlled by the Rockefellers, but it appears that they are aiming at a position of independence in this respect which is in harmony with their general policy. They have a number of vessels of their own and are placing contracts for the construction of other large steamships and barges, which may include ten in all, to be ready if possible by the opening of navigation. They will probably be able to accomplish this feat in vessel construction, as they can supply all the steel from their own mills, which is an advantage not possessed by other interests in need of vessels. Only a limited portion of their ore requirements will thus be charged with the $1.25 rate. For the current season it is understood that they are only paying 60 cents on their Rockefeller contracts. Other ore consumers have received a great deal of tonnage at equally low rates, but the activity in the iron trade has so far exceeded all expectations at the beginning of the season that much ad-

ditional tonnage had to be contracted for at sharp advances. For weeks the rate from the head of the lakes hung around $2. The fixing of charters for next year at $1.25 is thus a material reduction from the highest rates of this year, and is an evidence of conservatism which is commendable. Iron and steel manufacturers must expect to pay some advance on the hard times rate, but the imposition of an excessive lake freight on ore would be an addition to its cost that would probably cause hesitation in piling up stocks in furnace yards and at receiving docks for use in the winter of 1900 and 1901.

The great Chicago drainage canal, connecting Lake Michigan with the Illinois River and through it the Mississippi, is rapidly approaching completion and will shortly have the water turned in it. This is causing renewed attention to be given to the project long entertained of opening a deep navigable waterway from Chicago to the Gulf of Mexico. A convention was held at Peoria, Ill., on the 11th inst., composed of delegates from towns on the Illinois River, at which resolutions were adopted in favor of such a waterway and asking for liberal treatment at the hands of the general government in improving the river for that purpose. The convention appointed an executive committee, composed of representatives of Chicago, St. Louis and a number of Illinois towns, which will call a convention in the near future of representatives from all States lying along or directly interested in the proposed deep waterway. They are also empowered to begin a campaign and push the Illinois River improvement project to a conclusion as soon as possible. The drainage canal is so constructed as to depth, width, bridges, &c., that it will be available for navigation purposes whenever the Illinois River improvement is made.

OBITUARY.

WILLIAM S. FEARING.

William Sedley Fearing, prominent in the metal business in New York City, died on October 16, at his home in Brooklyn, after a short illness. He was a member of an old Cape Cod family and was born in Boston. Mr. Fearing started in business in New York in the metal house of Brown Brothers. At the dissolution of that firm he went into business for himself. Mr. Fearing was at one time vice-president and director of the Archer & Pancoast Company, then the largest gas fixture house in the United States. In 1896 he was appointed receiver for the company and was engaged in winding up the affairs of the concern at the time of his death. He was a member of the New York Hardware Club and the Lincoln Club in Brooklyn.

THOMAS W. WELSH.

Thomas W. Welsh, an old resident of Pittsburgh, died at his home in Wilmerding, Pa., last week. He learned the machinist trade, and was employed at the Pennsylvania Railroad shops at Twenty-eighth street, where he afterward became foreman. This position he resigned to accept that of superintendent of the Westinghouse Air Brake Company at the time that company was organized. He was active in its management as superintendent until a few years ago, when ill health made it necessary for him to resign. He continued, however, as a director of the company until the time of his death.

HAMILTON Y. CASTNER.

Hamilton Y. Castner, an electrolytical chemist and inventor, died October 10, at Saranac Lake, N. Y. He was born in Brooklyn, N. Y., in 1858, and studied chemistry at Columbia College, New York. Later he established an analytical laboratory in that city, and invented a process for manufacturing aluminum, which was adopted in England. Mr. Castner devoted his attention entirely to electrolytical processes, in which field he gained a considerable reputation.

ISAAC WILSON.

Isaac Wilson, one of the foremost pioneers of the Cleveland iron trade in England, died on September 22, aged 77 years. In 1841 Joseph Pease, the founder of Middlesborough, invited Mr. Wilson to join him there. Subsequently he joined Edgar Gilkes in a partnership which resulted in the establishment of the Tees Engine Works, under the style of Gilkes, Wilson & Co. This was followed in 1853 by Mr. Wilson making his first practical acquaintance with the business of iron manufacture, and during the same year the first blast furnaces built on the Tees were erected at Cargo Fleet by the firm of Gilkes, Wilson, Leatham & Co. The company has since undergone some changes, and is now known as the Teesside Iron works, though Mr. Wilson continued his connection with the firm up to the time of his death. He was for many years member of Parliament for Middlesborough.

JAMES O. PEASE.

James O. Pease, treasurer of the Phœnix Iron Company of Phœnixville, Pa., died at his residence, Germantown, Pa., on October 14. He was born in Washington, Miss., in 1818. When 17 years of age he went to Philadelphia and engaged in the dry goods business, and from that time until 1869 he was connected with various firms. In 1869 he retired from the dry goods business and became treasurer of the Phœnix Iron Company, which position he held up to the time of his death.

PETER S. HARMAN.

Peter S. Harman, prominently identified with the iron industry of Columbia County, Pa., died on October 15, at Bloomsburg, Pa., at the age of 68 years. Mr. Harman was for many years a partner in the firm of Harman & Sharpless, and was the head of the firm of Harman & Hassart, manufacturers of machinery, in Bloomsburg.

GEORGE TRITCH.

George Tritch, president and founder of the George Tritch Hardware Company, Denver Col., died at his home in that city on the 8th inst. Mr. Tritch was in his seventy-first year. A further reference to his interesting and successful career will appear in our next issue.

Carnegie Machinery Contracts.

(By Telegraph.)

PITTSBURGH, PA., October 18, 1899.—The Carnegie Steel Company, Limited, of Pittsburgh have placed a contract for the blowing engines for the two new blast furnaces which they are to build at Rankin, and also for the blooming mill engine for the new blooming mill at Duquesne, with the Southwark Foundry & Machine Company of Philadelphia. To the Riter-Conley Mfg. Company of Pittsburgh has been given the contract for the iron work for the two new blast furnaces, while the Keystone Bridge Works department will build the bridge across the Monongahela River, to take hot metal from Carrie furnaces to Homestead, and will also build the iron buildings for the new blast furnaces, the new blooming mill and the new open hearth plant at Duquesne.

Steel Flat Cars.—The Pressed Steel Car Company of Pittsburgh have received an order from the New York Central & Hudson River Railroad for 250 steel flat cars, and another order for 250 steel flat cars from the Michigan Central Railroad. The order from the New York Central Railroad is to be filled by next March, and the car company will make a special effort to get the cars completed by that time. The order for the Michigan Central Railroad Company will probably not be filled in much less than a year. The first lot of steel flat cars made by the Pressed Steel Car Company was shipped to China, for use on the Imperial Railroad of North China, but since then only a very few of these cars have been made, and none of the railroads of the United States have used them, except in a very small way. The Pressed Steel Car Company have made no effort to put their flat cars on the market, for the reason that the orders for gondolas and self clearing hopper cars have been sufficient to exhaust the capacity of the plant.

The Union Steel Company.—On Monday, October 16, the Union Steel Company of Pittsburgh made application for a charter of incorporation, with a capital of $1,000,000. It is said that the capital will be largely increased. W. H. Donner, A. W. Mellon and R. B. Mellon of Pittsburgh are the principal promoters of the enterprise. The company will manufacture wire rods and wire, and the plant will be established somewhere in the Monongahela Valley, near Pittsburgh. Blast furnaces and a steel mill in connection with it are contemplated. Contracts, it is stated, have already been placed for the rod mill and engines. The furnaces, when built, will be two of 600 tons each.

The Export of American Iron & Steel Products.*

BY J H. STERNBERGH, READING, PA.

It is not at all surprising that in the early stages of the development of the industrial arts in this country manufacturers were unable to make goods in competition with the older and more experienced foreign makers. In most lines we were not able to supply our home demand, hence the importation of foreign made goods to meet the demand of our rapidly increasing population has been on a most stupendous scale. But years have come and gone and our young men have been in school and college, and have picked up ideas here and there, and we have at length so improved the quality of our goods and increased the output of our machinery as to be able not only to supply the domestic demand in most lines, but to spare a surplus for our friends across the seas. Time was when we thought we should never be able to sell bolts and nuts in China and Japan, or to ship bar iron and machinery to England and Australia, but this is now no new experience to us.

Men.

In Europe there are 18,000,000 or 20,000,000 of men trained in the arts of war, a large part of whom are withdrawn from agriculture, manufactures, trade and commerce to be ever ready for the defense of their country. These men are in the prime of manhood, the best of their class; as a consequence, to a large extent, women and boys are obliged to take their places in the fields and in the factories. In America, our 18,000,000 to 20,000,000 of men are trained in our colleges and schools of learning in the arts of peace, while but a few thousand only are educated as soldiers. Rarely are women employed in our harvest fields, and but few boys under 16 years of age are employed in our factories. Women and boys are ill adapted to devise and promote improvements, either in methods of agriculture or to invent machinery for use in the mechanic arts. Here in America our intelligent men are the cultivators of the soil and the inventors of our improved agricultural implements—the plow, the reaping and mowing machines, the cotton gin and the cotton press and many others—and men, rather than women, are primarily employed in our factories and workshops. Naturally, under these conditions, more numerous and more useful inventions and improvements in the mechanic and industrial arts are made in this country than in Europe. It is not a question of cheap labor, nor, indeed, of fertile soils and congenial climates, but it is rather a question of intelligent men, capable of adopting improved methods and inventing and using the most efficient machinery for the purpose intended. The Western farmer, equipped with American agricultural implements, can raise and market wheat at 50 cents a bushel and corn at 15 cents a bushel, while in Europe the same crops could not be placed on the market for less than double this sum; hence our happy isolation from contentious and warlike neighbors enables us to employ to the greatest advantage our best men in the development of the industrial arts and of commerce.

Materials, Machinery and Methods.

Scarcely less important is our wealth of natural resources, the extent and fertility of our soil; the enormous value and variety of our crops; the product of our forests and mines, and the production of the precious metals. Of all the countries under the sun, Great Britain, until recently, led the race in the production of pig iron, but the United States has lately caught up with her, and now holds this coveted position herself, and neither Great Britain nor any other country will ever wrest it from us. Twenty-five years ago we produced less than 2,000,000 tons of pig iron per year. This year we shall produce 13,000,000 tons—far outstripping the production of Great Britain—and the first year of the twentieth century we shall probably produce 15,000,000 tons; and, no doubt, in the year 1910, if nothing meantime checks our onward progress, we shall produce 25,000,000 tons of pig iron; while Great Britain will probably not be able to produce half this amount. England mines deep for her ores and coal, and supplements her scant supply with importations of ore from other countries, while in this country the richest and most extensive ore deposits known in the world lie near the surface, in close proximity to supplies of fuel and limestone. For 3 cents per ton ore is loaded by machinery on cars carrying 50 tons each, moved to the furnace over a line of road laid with steel rails weighing 100 pounds to the yard, dumped into small cars that elevate the ore and distribute it by automatic machinery over the surface of the roasting ovens, where the excess of sulphur is driven off under a heat of about 1500 degrees F.; hence elevated automatically and dumped into the top of the blast furnace, where two-thirds as much coke and one-third as much limestone are also dumped and smelted by the aid of coke and an air blast heated to 1500 degrees, blown into the furnace under a pressure of 18 to 20 pounds per square inch, and the molten iron drawn off five times every 24 hours into large ladles supported on trucks and carried a short distance and poured into small molds, each of suitable size for the pigs of metal, which molds are attached to an endless chain and finally drawn through a tank of running water in order to cool the metal, and then dumped into a car, weighed automatically and shipped to the purchaser All of these operations, from first to last, are performed by mechanical methods without human hands touching the material. Formerly scores of men were employed about such a furnace, now only here and there a man is to be seen. Over 700 tons of pig metal are turned out by one of these modern furnaces every 24 hours, week days, Sundays, holidays and all—a real God-send to a railroad having such a furnace on its line, for besides the 1000 tons or so of iron ore, there is to be carried and delivered to the furnace 1000 more tons of coke and limestone, and then the product, 700 tons of pig metal, is to be carried to the market. In all 2700 tons or more transported every 24 hours! Little wonder that this country has at length been able to ship pig iron and merchant bars to mother England; locomotives to China and Japan; steel bridges to India and Egypt, and hardware articles and machinery of all sorts to all of the distant corners of the earth! Since last December the increased activity in all departments of trade and commerce has led to an excessive domestic demand for all kinds of goods, which has checked for a time this export business; but normal conditions are bound soon to resume sway, and neither broad seas, nor far distant shores can prevent us from resuming on a larger scale a business that has afforded so great satisfaction in the beginning. Nor is the fact that we pay higher wages in this country than anywhere else in the world a bar to our ability to renew the export of our manufactured products. The greater productive capacity of our artisans, the lower cost of food and especially our improved methods and machinery, more than offset our higher rate of wages.

Markets.

Notwithstanding these advantages, it is a fact that but a small percentage of our manufactured products has thus far found its way to foreign markets, and this owing to our lack of commercial agencies abroad and an intimate knowledge of the precise kind of goods wanted. The intelligent and aggressive English and German manufacturer has long since been there ahead of us. He has established agencies and sent out his cousins and his nephews to show goods and solicit business. He has learned what quantity and style of goods are wanted, how to pack and how to ship, and is willing to wait nine months or a year for his pay. He has established financial institutions and laid deep and strong the foundations of permanent trade relations. For Americans to crowd in alongside of our enterprising English and German competitors means war—commercial war—not in a hostile spirit, nor even an envious or jealous spirit, but in friendly competition and open rivalry, relying for success upon the quality and price of our goods and upon our clean straightforward ways of doing business. But we shall get there, and we shall stay; because we have got the men and the material, and the machinery and the methods; and these are bound ultimately to win for us the markets. Indeed, so lofty is our ambition that if we could only find means of transportation we would be willing to ship our goods to those bright orbs that so long have cheered our nightly labors, Mars and Venus, Jupiter and Saturn!

I have long believed in a protective policy for this country. As long as we were more or less dependent and making an effort to supply our home demand, I thought it not unreasonable that we should build up a wall and keep foreign goods out; at least such as would, if admitted free, work a hindrance to our own development, But now that we have grown strong and lusty, and are able to compete in most lines with foreign makers, it seems to me we ought to take off some of the stones from this wall and allow a freer trade; at least to give as much to other nations as we ask from them, and treat them in this respect as we would like to be treated by them; hence a freer, more liberal and fairer trade with all the nations of the earth.

Such friendly competition would tend to increase mutual respect and confidence, add dignity to our national character, and promote and strengthen the bonds of peace and fraternal relations.

At Pittsburgh a bill in equity has been filed by the Monarch Water Heater Company against the Globe Mfg. Company, to restrain the defendants from manufacturing a certain water heater.

* A Paper read before the Commercial Congress at Philadelphia, Pa., October 14, 1899.

The Blue Mountain Iron & Steel Company.

The Blue Mountain Iron & Steel Company of Maryland, recently organized, are the owners of the Catoctin iron tract, situated in Frederick County, Maryland, about 60 miles west of Baltimore, and connected with the Western Maryland Railroad by a road running through the property and direct to their furnaces.

The property consists of about 10,500 acres of valley and mountain land, 8000 or more acres being in wood of all kinds indigenous to that section. The tract reaches from the valley to the summit of the Catoctin Mountains, a spur of the Blue Ridge extending for 5 miles along the mountains.

At the base of the mountain, running the entire length of the property, are large beds of hematite ore, varying from 40 to 50 per cent. in metallic iron of as yet unknown depth, for though the property has been worked for 100 years and more, and great quantities of ore consequently taken out, the openings are hardly appreciable, and the greatest depth thus far made, say 70 feet.

Higher up in the mountains, running in the same direction, for a distance of 5 miles, is a vein, or rather a series of veins, of rich magnetic ore, low of sulphur, and with but a trace of phosphorus, one of the best ores for steel working obtainable. Analyses show it to contain 65 to 69 per cent. metallic iron. It is claimed that both these deposits are so advantageously located for cheap mining and self draining as to enable the company to put them at their furnaces, or on cars for shipment at a low price.

Intermixed with the hematite ore is a fine deposit of paints, consisting of umbers, ochers, sienna, oxides, &c., and valuable clays. As they are obtained from the washing of the ores, they become by-products.

The improvements consists of two furnaces, one for coke iron of 50 tons daily capacity, and the other a charcoal furnace of 15 tons, a paint mill of 15 tons, a village of 75 houses and cottages, stores and office building, blacksmith shop and carpenter shops, 4 miles tram road, and general equipment.

The company are organized under the laws of Maryland, the capital stock is $500,000. The purpose of the company is to enlarge their present furnaces, to add a new furnace of 150 tons, increase the facilities for mining both hematite and magnetic ore, to increase the paint plant to 40 tons per day, build about 75 more cottages, &c. For these improvements they have issued $500,000 at 5 per cent. 30 year gold bonds, interest payable March and September of each year. The Produce Exchange Trust Company of 26 Broadway, New York, act as trustee. A sinking fund, satisfactory to the Trust Company, is provided for the retirement of these bonds.

When the improvements now planned are completed, the company will erect an extensive steel plant for the utilizing direct of their magnetic ores. The officers of the company are Jerome Keeley of Philadelphia, president; W. B. Price, vice-president; Abraham Sharp, treasurer, and Edward C. Pritchett, secretary, who, with O. A. Kirkland, Ernest Sharp and Charles W. Miller, all of Baltimore, constitute the directors.

The Menominee Range.

MARINETTE, WIS., October 14, 1899.—A visit to Crystal Falls, Iron Mountain, and other portions of the Menominee range the past week revealed much of interest. The favor in which their generally high phosphorus ores now stand is in marked contrast to the situation a year and more ago, and the general Menominee basin is now, it is safe to say, more highly regarded as a profitable field for exploration than any other of the American ranges. There are not lacking indications that the next great finds of iron ore in America are to be on the north shore of Lake Superior, but the interest there is to-day little compared to that of the Menominee region.

On one day this week there were, at the little town of Crystal Falls alone, representatives of the American Steel & Wire Company, of Pickands, Mather & Co., of the Federal Steel Company, of the Oliver Iron Mining Company and of Corrigan, McKinney & Co., besides individuals also looking for favorable lands. Not all of these made deals, but the Steel & Wire Company closed two options near Crystal Falls, while what appears to have the making of a magnificent property was taken by individuals. The Oliver Company, Ogelbay, Norton & Co., Pickands, Mather & Co. and the Minnesota Iron Company are already heavily interested in the district, and are increasing their properties on the range as rapidly as may be.

The little towns of the Menominee, whose buildings have been boarded up, whose chief subsistence for several years has been lumbering, and whose once active mines have been filled with water, are all now humming with activity. Wages are on a $2 a day basis, and men are very hard to get. New and pretentious buildings are going up, stores look prosperous, the streets are alive, and scores of mines and explorations, abandoned since the early 80's, are either hoisting ore or being put into shape.

I rode from Iron Mountain to Crystal Falls with James Corrigan of Cleveland, who now controls and is operating the Crystal Falls, Great Western, Lincoln, Lamont and other properties in the same vicinity. "I bought the Crystal Falls five years ago," said he. "We did not pay much, but everybody thought what we did give was a sure sign of insanity. We could sell the group to-day for seven times what it cost us." And I guess 27 times would be nearer, for the later purchases cost almost nothing and are developing splendidly. The Corrigan mines are shipping 3000 tons a day, and other properties close by add materially to Crystal Falls' output. The village of Florence is excedingly active, and trade there is tenfold greater than two years ago. A large tonnage of ore will be shipped off the Menominee range the coming winter all rail. It has been decided, in view of the large traffic impending, that the car ferry route across from Green Bay to the Lower Michigan Peninsula shall be kept open all winter, and a great quantity of ore will take this route east. It is even now being used, and Hocking Valley trains are daily taken across the lake on their way to the valley furnaces. All rail shipments to Chicago are now steadily under way, at a profitable figure. The Mansfield mine is shipping ore into Kentucky, and inquiries have been received by one mine operator at least as to winter shipments to furnaces at and near St. Louis. Steady shipments will be made to Chicago during the winter.

The unusual geological conditions of the wide Menominee basin have upset theories—as most great mineral areas do when thoroughly explored—and ore is being found in unexpected lenses in, one might almost say, all directions. There may yet be made, on that range, discoveries of high importance that will insure a long career to its iron towns. Its ore is cheaply mined, is of excellent physical character, and the expense of getting to market at any season of year is moderate. It is likely that this year's shipments from Escanaba and Gladstone will be 4,000,000 tons, in which total, however, is a considerable proportion of Gogebic and Marquette ores.

D. E. W.

The Coal Situation in Chicago.

Although Illinois has enormous coal fields of its own, and coal deposits of other States are within convenient distance of Chicago, a serious shortage of fuel is now threatening that city. A local journal thus states existing conditions:

The shortage in the supply of bituminous coal, which Chicago has been experiencing to a greater or less extent for the last two or three months, and especially within 30 days, is developing into an actual famine, and it was the consensus of opinion of the members of the Miners' and Wholesalers' Coal Association of Chicago, at their regular meeting at the Great Northern Hotel, that another advance of from 30 to 50 cents a ton was probable within 30 days. During the last month prices have gone up from $1.60 and $1.70 a ton to $2.25 and $2.30, and no one would be surprised to see $2.75 reached within the next month.

There is an estimated shortage now of from 700,000 to 900,000 tons, as compared with the normal supply, and there is every prospect of this increasing rather than diminishing with the advent of cooler weather. The situation is complicated by the fact that not only is there a decrease in the amount of coal coming to Chicago, but there is also an enormously increased demand owing to the prosperous times, which have stimulated all lines of manufacturing. One large dealer cited as an illustration of this one of his customers, who formerly took 10 tons a week, and who now takes 30 tons.

The decrease in the amount coming to Chicago, as compared with last year, is due to scarcity of men to work in the mines and to scarcity of cars for transporting the coal.

The result is that the wholesale dealers in Chicago have practically no surplus coal on hand, and what is more they are compelled to divide up each consignment they receive among those with whom they have contracts, and they dole this out with a sparing hand.

An illustration of the stringency was furnished in the case of one of the largest dealers the other day, when he went to a customer to whom he had just sold 500 cars, and paid him 25 cents more a ton for the same than he sold it for.

There is a pinch in anthracite coal also, and a further advance over the 75 cents increase made since July is certain to come with cold weather. There is an estimated shortage of from 500,000 to 700,000 tons, as compared with a year ago.

The History of Steel Manufacture in Sheffield.

At the occasion of his installation as Master Cutler of Sheffield R. A. Hadfield delivered an address in which he sketched as follows the development of steel manufacture in Sheffield:

The question may naturally be asked, What led to Sheffield becoming such an important manufacturing center? It is well known that there are evidences of numerous ancient workings of iron ore in the district; the Romans themselves had taught the British much in this respect, and the Normans, in their invasion, brought over many smiths and other skilled artisans. About the year 1100 one of the earliest Norman lords obtained a charter to erect forges for the working of iron at Kimberworth. Although of much later date, at the Wortley Iron Works of T. Andrews, F.R.S., there exists an interesting carved stone, bearing date 1713, showing a tilt hammer of the type then used. Dr. Gatty thinks that the Roman Rigg or Ridge, extending from Wincobank to Templeboro, had led to local iron stone being exposed, but inferior or phosphoretic ore, such as existed in this part of our country, could not have made good steel, whether worked up direct or made into wrought iron and carburized by cementation, as then practiced. While no doubt iron was locally produced, it would not have been suitable for steel of even medium quality. We are, therefore, driven back to the fact that in the early days Sheffield's products were almost entirely made from imported Swedish, German and other foreign steel. The material used was no doubt originally bought in its cemented condition, but afterward the cementation was done here. It was, therefore, due rather to natural advantages, such as the abundance of wood, and, later, the discovery of coal, that our manufacturing operations took root. In witness of this may be cited the intelligent observations of a Frenchman, Jars, who visited Sheffield during the middle of the eighteenth century, and afterward published an interesting account of his trip. Streams for working the grinding wheels used were also abundant, and generally the conditions of manufacturing were favorable; probably, however, a still more important feature at that time was the accumulated special skill of its workmen, gradually aggregating themselves into associations and guilds.

That Sheffield trade became important at an early period must be admitted from the evidence of the well-known Chaucer quotations, probably about 1360, regarding Sheffield "Thwitels." Again later, Lord Shrewsbury, when presenting Shieffield made knives to Lord Burleigh, wrote: "Such things as this poor country affordeth with fame throughout the realm." Still earlier may we not claim for Sheffield manufacturers an important position as makers of munitions of war in the shape of projectiles—to wit, arrow heads? Tradition says that the victories gained at Crecy and Agincourt were due to the Sheffield projectiles of that day being too much for the French armor! Johnson, the antiquarian, found a record which stated that Sheffield had at that time furnished to the Government no less than 5000 arrow heads at a price of 15 pence per 100. In face of this evidence of the quality of Sheffield's work the prowess of Robin Hood and Little John can easily be understood!

As regards the materials used in the manufacture of cutting instruments of all kinds, it is clear that long before the time of Huntsman, who effected the first important advance in the manufacture of cast steel, the city drew these entirely from outside, or, at any rate, those from which high quality goods were produced. This is confirmed by the statement that in 1750, or 150 years ago, no less than 4000 tons of Swedish iron were worked up here. Supplies are also said to have come from Spain. Probably after this important trade first commenced some of the material was converted into blister steel at the then port of entry, Newcastle. M. Gabriel Jars, in his "Voyages Metallurgiques, 1764-1774," states that there were then several manufacturers of steel at Newcastle-on-Tyne—that is, the cementation of imported bars was carried on at that city. This process, without doubt, originated on the Continent. There are also records that even the South of England contained steel works—that is, cementation furnaces—for ancient records show that in 1609 one John Hawes held the site of the Abbey of Robertsbridge, Sussex, upon which were eight steel furnaces.

It was probably about 1730, or a little earlier, that Huntsman commenced his experiments, which resulted, owing to his labors primarily, and to those of others later, in the present successful condition of the high quality steel trade for which Sheffield is justly famous. Probably more of this crucible steel is produced to-day than at any time in our history. Notwithstanding the rapid march in metallurgy and in the introduction of new processes, these, while meeting other requirements, have not destroyed the crucible steel industry for which Sheffield has been so famous since the time of Huntsman. As some have questioned the importance of Huntsman's work, the late Dr. Percy, who has special claim to authority, said: "So far as I am aware, steel was never melted and cast after its production, and in only one instance, that of Wootz steel, was it ever molten during its production, so that for the practical solution of this problem we are indebted to Benjamin Huntsman of Sheffield." While the mere melting of materials in crucibles was not novel, his invention consisted in successfully solving the great difficulties to be overcome before this could be applied to the practical production of steel. Probably his skill lay largely in producing crucibles of sufficiently refractory nature to withstand the high temperature of the melting operation; also in finding the correct type of melting furnace and the flux to be used, the latter a point then of special importance. By the trade this method is still often called "steel refining," though, of course, in the sense of purification this term is not quite correct. The great drawback then experienced by manufacturers was that while imported material from Sweden and Germany was of excellent purity, whether as bar iron or crude steel, the cementation process employed to effect the change, or "convert" the bar into steel or blister steel, gave a production of uncertain temper. The Huntsman method of fusion obviated many of the difficulties met with in the cementation process, and it certainly proved to be the first practical solution of the important problem of how to make steel of homogeneous and uniform quality. M. Gabriel Jars in 1764 described how the blister steel was fused, the method being practically the same in many points as that employed to-day in the crucible process. It was thought that the flux used formed the great secret, and much rejoicing occured when some one found this to be ground bottle glass. M. Jars describes how this special steel was then only used for the best razors, some kinds of knives, the finest steel watch springs and watch makers' small files.

In 1787, or only ten years after Huntsman's death, Gale's Sheffield Directory showed, by the five or six firms entered under the heading of "Steel Refiners," that the men of Sheffield had not been slow to take advantage of the improvements effected by Huntsman. It may be of interest to add that there were in that year about a dozen firms engaged in the converting or cementation process. Also about 50 makers of edge tools, 40 of files, 300 of pen, pocket and table knives, 50 of razors, close upon 100 of scissors and some 60 or 70 engaged in the manufacture of scythes, sickles and shears. Names of manufacturers at that time engaged in the Sheffield trades are well known even now, and their existence to-day, as of many other old firms, is, I think, a good proof that the motto of our Cutlers' Company, *Pour y parvenir a bonne foi*, has faithfully represented their aims. That the city has made continued progress in this special manufacture is shown by the following figures: In 1835 there were 56 converting furnaces and about 564 melting holes; in 1842 there were 97 converting furnaces and about 777 melting holes; in 1856 there were 105 converting furnaces and about 874 melting holes; in 1899 there are probably at least 2000 to 2500 melting holes. When it is considered that in 1850, or 50 years ago, it was thought to be a great feat when Messrs. Turton of the Sheaf Works produced an ingot weighing 25 hundredweight, afterward shown at the great exhibition, well may we exclaim that times have changed and we with them. Although it is difficult to fix an exact figure, it is probable that 1000 tons of crucible cast steel are each week melted in Sheffield, involving the use of about 14,000 crucibles. Huntsman would indeed be astonished to find his child grown into such a giant. As regards the development of the modern steel making process and other kindred trades, these are all well known and need not be dealt with in this address.

Sheffield has done much as a metallurgical center, both as regards commercial progress in its own interests and as to adding general scientific knowledge to the world's stock. The days of Huntsman saw the commencement of steel manufacture; his methods have been adopted in many other manufacturing centers; while, as regards the revolution effected by Bessemer, to whom the world at large is greatly indebted, much as we owe to him, I venture to think that if it had not been for the pluck and perseverance of practical Sheffield men, who assisted him in the development of his process, it would not have so rapidly attained the remarkable success it has done. Among men who, by their business qualities or inventive abilities, have helped Sheffield to attain its present high position in the metallurgical world are Brown, Jessop, Cammell, Firth, Reynolds, Vickers, Wilson, Andrew Fox, Seebohm, Howell, Doncaster, Colver, Jonas, Osborn, Sanderson, who carried out steel alloy experiments for Faraday, Mushet, Lucas, who was one of the first in 1815 to perfect malleable cast iron; Spencer, Stubbs and others; also those who have come into our midst from abroad and have done well

for our city by their business acumen and energy. I have dealt above with those names specially associated with the manufacture of steel. In its kindred branches and other industries there are equally well-known manufacturers of long standing repute, such as Rodgers, Belk, Richardson, Chesterman, Wolstenholme, Bingham, Mappin, Britain, Bedford, Tyzack, Beardshaw, Cadman, Harrison and many others.

Trade Publication.

Measuring Instruments.—The John M. Rogers Boat, Gauge & Drill Works, Gloucester City, N. J., have just issued a 30-page catalogue covering measuring instruments of precision, shell reamers with adjustable blades, rose chucking reamers, rock drills, special tools and machinery. McCanna's patent adjustable thread cutting and milling tool, for thread cutting, milling, counter boring, facing, pointing, cutting tapers and general brass finishing and machine work, is given a good deal of space, and its utility as a labor saving tool fully explained. Eight pages are given up to tabulated information of use to mechanics and others, and lend additional interest to the catalogue.

The Mahoning Ore Property.—The American Steel Hoop Company of Pittsburgh have purchased from E. C. Converse, William B. Schiller and Florence Crosby their fifth interest in the famous Mahoning mine on the Mesaba range. The reserves in this property are enormous. The Mahoning Ore & Steel Company pay a royalty of 15 cents per ton on the first 1,000,000 tons of annual production, and 12 cents on the excess over that figure. Its shipments in 1897 and 1898 were close to 520,000 tons each year. The average analyses for 1898 of the Mahoning and Beaver ores were as follows:

	Mahoning.	Beaver.
Iron	64.92	63.39
Silica	2.55	2.20
Phosphorus	0.049	0.083
Manganese	0.44	0.22
Sulphur	...	0.020
Alumina	1.79	1.93
Lime	trace.	0.24
Magnesia	trace.	0.17
Moisture	10.34	11.20

The Cambria Steel Company control one-half of the property, while the Republic Iron & Steel Company and others in the Mahoning Valley are fractional interests.

The American Steel Hoop Company have also bought considerable coal property late in the Pittsburgh district, participating in one recent purchase of 6500 acres.

Taking effect October 12 the rate on pipe iron or steel, in lengths of 12 feet or over, to be used in the manufacture of pipe, in carloads 15 gross tons or over, from Pittsburgh, Monessen, Beaver Falls, Pa., and intermediate points to Paterson and Newark, N. J., will be $2.90 per gross ton.

It is stated that a traffic arrangement is being made between the Buffalo, Rochester & Pittsburgh and the Pittsburgh, Bessemer & Lake Erie railroads, which will provide for an immense interchange of traffic from the lakes to tidewater. The latter outlet is secured through the traffic arrangements which the Buffalo, Rochester & Pittsburgh has with the Beech Creek, the Philadelphia & Reading and Central of New Jersey.

A West Virginia charter has been issued to the Cuban Mining Company of Allentown, Pa., to do a general mining and milling business in Cuba. Capital subscribed, $1,000,000; paid in, $100,000, with the privilege of increasing the same to $2,000,000. The shares are $100 each and held by Samuel Adams of South Bethlehem, Pa.; Oliver Williams and John Fritz of Catasauqua, Pa.; Edward Harvey, Henry Adams and Joseph W. Adams, all of Allentown, Pa.

The Sante Fé Road has ordered 55 new consolidation engines from the Baldwin Company and twenty Moguls from the Richmond Locomotive & Machine Company. The contracts call for immediate construction in order to supply the increased traffic demands upon the road.

The discovery is said to have been made that the smokeless powder for the seacoast fortifications has deteriorated to such an extent as to be useless. The loss to the Government will, in that case, be about $500,000, and it will take from six months to a year to renew the supply.

MANUFACTURING.

Iron and Steel.

We stated in these columns some time since that the old Bessemer steel plant of the Premier Steel Company, at Indianapolis, Ind., had been sold to W. J. Carlin Company, Lewis Block, Pittsburgh. The plant contains two 4-gross ton basic converters. A company have been organized to operate this plant, identified with whom is H. Blair Miller, formerly superintendent of the Duquesne Steel Works of the Carnegie Steel Company, but more recently connected with the Illinois Steel Company. It is the intention of the owners, in connection with Mr. Miller, to put the plant in first-class condition and start it in operation as soon as possible. It is expected to have the plant ready for running in about two months, or not later than January. The concern are desirous of engaging skilled labor of different kinds.

The Chester Rolling Mill Company, which concern have had under erection for some time a large sheet mill at Chester, W. Va., are pushing work very fast. The usual delays incidental to scarcity of material and labor have interfered somewhat with the building of this plant, but it is expected to be ready for the manufacture of sheets not later than the first of the year. The contract for the mills has been placed with the Lloyd Booth Company, Youngstown, Ohio; for the engines with the C. G. Cooper Company, Mt. Vernon, Ohio, while the boilers will be furnished by the Babcock & Wilcox Company of New York.

The Westmoreland Steel & Mfg. Company of Pittsburgh have been granted a charter in West Virginia, with a capital of $3500, with the option of increasing it to $250,000. The purpose of the concern is to buy, sell and manufacture iron and steel and other metals. The incorporators are C. S. Knight, Jr., C. S. Cook, J. D. Sutherland of Pittsburgh, and W. S. Wright and H. S. Sands of Wheeling, W. Va.

The American Tin Plate Company have commenced dismantling the two-mill plant at West Newton, Pa., formerly operated by Hamilton & Co. The mills and equipment will be removed to the Humbert Works at South Connellsville, Pa. The plant at Blairsville, Pa., formerly operated by the Blairsville Rolling Mill & Tin Plate Company, but which was taken over by the American Tin Plate Company, has been closed down for a long time and will probably not be operated again, but will be removed to some other plant. A delegation of Blairsville citizens recently visited the officials of the American Tin Plate Company at Chicago, to endeavor to induce them to operate the plant at Blairsville. No assurance was given, however, that the plant would ever be started again. A proposition was then made to the American Tin Plate Company that they sell the plant back to some of the citizens of Blairsville, but this was declined.

The Alan Wood Iron Company, at Conshohocken, Pa., are putting in a 72-inch sheet mill.

The molders employed by the National Tube Company, at McKeesport, Pa., have asked for an advance of 10 per cent. in wages.

We have been advised that the report that the Apollo Iron & Steel Company of Pittsburgh would build another sheet mill and establish a new town near their present plant at Vandergrift, Pa., is untrue.

The Wellsville Plate & Sheet Iron Company, Wellsville, Ohio, manufacturers of all grades of sheet iron and sheet steel, are contemplating some considerable extensions to their plant at Wellsville, but have not as yet fully decided exactly what they will be. This concern have found it necessary to make some additions to their plant as quickly as possible in order to meet the increased demand for their Wellsville polished sheets, the demand for which this year has been very much larger than ever before. The concern will probably add two or three sheet mills and two cold roll mills, with the necessary buildings, boilers, &c., in connection therewith.

The Horace Lamb wire plant, at Northampton, Mass., which had a reputation of some value as manufacturers of special wire, including tinned mattress and broom wire, and which was greatly injured by a fire in June, is now fully rebuilt and is under the control of the New Haven Wire Mfg. Company, and is in a position to handle orders.

The Superior Steel Company, now being organized, propose to make a number of improvements in the plants controlled. Three large open hearth steel furnaces are to be added to the York mill at Duluth, Minn.

Circulars relative to the late Springfield Iron Company, Springfield, Ill., have been sent to the stockholders of the company, stating that they will receive no dividend from the sale of the plant to the Republic Iron & Steel Company, and informing them that the former company are still in debt to the amount of $92,456.19. The communication is quite lengthy and recites the troubles of the company since 1890, giving a complete history of the sale of the plant. The plant was sold for $400,000, and the stockholders expected to receive something from the amount realized.

The Minerva Pig Iron Company, Milwaukee, Wis., are en-

larging their boiler capacity and adding another blowing engine to their furnace equipment, expecting thereby to increase their output, now 75 tons, to 100 tons per day.

The Clinton Iron & Steel Company of Pittsburgh are making some improvements to their Clinton Furnace. A new two-pass stove, 20 x 92 feet, is being erected, and when this is completed it will be used to permit of the other stoves one by one being raised 20 feet. An Allis blowing engine, with steam cylinders 60 x 84 inches, is being added. The increased blowing and heating capacity are for the purpose of increasing the uniformity in the pressure and temperature of the blast.

In September the Youngstown works of the National Steel Company, Youngstown, Ohio, made 4590 heats. The Bessemer vessels turned out 46,876 tons of material, of which 21,042 tons were rolled into tin bars and small billets, and 20,235 tons into 4 x 4 billets and larger. The total output of the finishing mills was 41,277 tons.

The Carnegie Steel Company, Limited, Pittsburgh, have let a contract for the erection of large office buildings at Munhall for the Homestead Steel Works.

The directors of the Warwick Iron & Steel Company of Pottstown, Pa., have authorized Edgar S. Cook, president and general manager, to proceed with the erection of a new blast furnace at once. Its capacity will be 300 to 400 tons per day, the make depending upon the proportions of anthracite coal and coke which may be used as a fuel.

Jones & Laughlins, Limited, operating the American Iron & Steel Works, Pittsburgh, Pa., intend to increase the converting capacity of their Bessemer plant by the addition of a number of new soaking pits and also by enlarging their converters. It is also possible that they will put in a new blooming mill. This concern are increasing their finishing output by the construction of several new finishing mills, which are almost completed, and are equalizing the products in their various plants, commencing with the blast furnaces and running through the steel works and finishing mills. It is the expectation of this concern to produce about 2500 tons daily of material in their finishing mills by January 1. They have one of their new 600-ton blast furnaces in operation and another is expected to be ready in December. The third furnace will be ready by July 1 of next year and the fourth one late in 1900. It will also be recalled that Jones & Laughlins, Limited, purchased some time ago Soho Furnace, in Pittsburgh, which is making 290 to 300 tons of Bessemer iron daily. It is their intention to remodel this furnace at some time, probably after the four new furnaces referred to above have been completed and in operation. Should this be done the firm of Jones & Laughlins, Limited, will have a capacity for turning out close to 3000 tons daily of Bessemer pig iron. Jones & Laughlins, Limited, have just placed an order with the Duff Patents Company, Carnegie Building, Pittsburgh, for a large number of Duff gas producers of the largest size.

The National Tube Company have under erection a new blast furnace at Benwood, W. Va., and plans have been drawn for a second stack. The furnace under contract was originally started by the Riverside Iron Works, who were taken over by the National Tube Company. The company have now one completed furnace at Benwood, which was formerly operated by the Riverside Iron Works.

The Shelby Steel Tube Company, Cleveland, Ohio, are very busy at their Greenville Works, Greenville, Pa., on orders for cold drawn seamless tubing, in sizes 3½ to 8 inches in diameter, for Government use.

The Carnegie Steel Company, Limited, are to make some important improvements at furnaces D and E of the Edgar Thomson group at Bessemer, Pa. Six blowing engines will be taken out. The engine house will be built much larger to hold eight very large engines that will have practically double the capacity of the six engines now in use. The engine rooms will be built 25 feet higher and 45 feet longer. The hot blast stoves connected with the new furnaces named above will be built 10 feet higher and the two stacks will be raised considerably.

The Cumberland Steel & Tin Plate Company have about completed the erection of a four-mill sheet plant, comprising one 48-inch mill, one 38-inch mill and two 26-inch mills, with two stands of cold rolls, and will shortly be ready to operate. Besides the ordinary Bessemer sheet iron they will make black plates for stamping and enameling, produced from sheet bars rolled from stock made in their new acid open hearth furnace recently built by Wm. Swindell & Bros. and now in successful operation. The sheet mill building is entirely of steel, 80 x 250 feet, and was erected by the Fort Pitt Bridge Works. It is equipped with a Mesta pickler capable of pickling sheets 12 feet long. The entire plant is lighted by electricity from their own dynamo, which also runs their traveling cranes.

The Cumberland Rolling Mill, at Cumberland, Md., the property of the Baltimore & Ohio Railroad, has been recently acquired upon long lease by a Pittsburgh syndicate represented by S. J. Macfarren, a traction engineer of this city. They have organized under the name of the Potomac Steel Company. The plant, which has been idle for some years, has been repaired and improved and is ready for work. The Potomac Steel Company will make a specialty of light section steel rails, joints, ties and equipment for mining, lumbering and plantation use. They will seek Southern and export trade.

Machinery.

The New Era Iron Works Company of Dayton, Ohio, manufacturers of New Era gas and gasoline engines, have during the last four or five years been greatly increasing their output, and from time to time making changes and additions to their present factory to accommodate the increased demand for their engines, until now they are occupying every foot of space, and the increased demand within the last six months has necessitated their looking around for more shop room and facilities. They therefore recently purchased a large piece of ground, covered with several large factory buildings and a foundry, which they are now preparing to receive their factory. Within the next six months they expect to be able to turn out double the number of engines and be in shape to fill orders more promptly. The new factory will be equipped with two or three of their gas engines, one of which will furnish electric lights for the entire plant, another power for the fan and rattlers in the foundry and another for the general machine shop. The plant will be heated by steam and altogether will be thoroughly modern and up to date. This concern claim the distinction of building the largest single cylinder gas engine in the United States.

We are officially advised that the report that the Dickson Mfg. Company, Scranton, Pa., manufacturers of locomotives, mining machinery and stationary engines, had been negotiating with the Midvale Steel Company for the transfer of their plant is untrue and has no foundation whatever.

The machinery and electrical department of the United States Commission to the Paris Exposition have purchased from the Ball Engine Company, Erie, Pa., manufacturers of automatic cut off engines, a 350 horse-power tandem compound engine arranged for direct connection to a Bullock generator, to be used as a working exhibit in the machinery annex at Vincennes.

The Columbiana Pump Company, Columbiana, Ohio, manufacturers of pumps, brass goods and plumbers' supplies, advise us that they are very busy, and, in fact, have more orders than they can fill. This firm are composed of M. C. Harrison and T. E. Long, and are successors to the Columbiana Pump & Machine Company.

The S. Jarvis Adams Company of Pittsburgh have made application for a charter of incorporation. The incorporators are Henry C. Fownes, J. Ramsey Speer, W. C. Fownes, Jr., Joseph McKnight Speer and Charles McKnight. These parties recently bought the plant of S. Jarvis Adams & Co., iron founders, located at Fourteenth and Ætna streets, and have decided to organize a corporation. The plant makes malleable iron castings and general foundry work. It will be much enlarged and considerable new equipment installed.

The Weimer Machine Works Company, Lebanon, Pa., builders of blowing engines, cinder and iron metal cars, and general work for blast furnaces and steel works, have for the past 18 months been running their machine department double turn, and in the foundry, smith and pattern and boiler departments they have been making 14 hours per day. This concern advise us that, while they have in the past at times not been able to take all the work offered them, they are at this time in better shape to take new work, as they have been able to catch up with their orders by working double turn.

Carrier, Laine & Co., Levis, P. Q., Canada, manufacturers of marine and stationary engines, locomotives, stoves, &c., have their whole equipment in full operation at the present time. The average number of hands employed during the year is 425. It is intended to enlarge the works considerably in the course of a few months.

The West Coxsackie Iron Foundry Works, at West Coxsackie, N. Y., were destroyed by fire October 10. The company will rebuild at once and expect to be running in about 60 days.

Northern Engineering Works, Detroit, Mich., crane manufacturers, are adding an addition to the plant recently purchased by them. The interior arrangement of the machine shop and office is also being remodeled, with a view to enlarging the capacity of the plant.

The Rivett-Dock Company, Faneuil, Mass., have organized with a paid in capital of $300. The officers are as follows: Herman Dock, president; Clifton E. Wing, treasurer; Edward Rivett, vice-president and general manager. The company are manufacturing the Rivett-Dock lathe threading attachment. Their present manufactory at Faneuil is but temporary, and we understand a large plant will be built either at the present location or elsewhere very soon.

The Union Boiler Tube Cleaner Company of 238 Penn avenue, Pittsburgh, Pa., have recently finished the largest contract ever awarded for cleaning boilers, being 22 water tube boilers, containing an aggregate of 10 miles of 4-inch tubes—a task no other concern in the world has equipment to accomplish. They have just shipped their eighth machine to England and Scotland. The initial machine for export had been shipped just one year previously. One of the latter was a repeat of the first order.

The Sattley Mfg. Company, W. H. Kremer, superintendent, Decatur, Ill., with main office at Springfield, Ill., have leased the Decatur Malleable Iron Company's plant and made extensive improvements in the property which will about double the ca-

pacity. Vanderpool & Co., Chicago, furnished the considerable equipment of tumbling barrels. New offices are being erected at Springfield, with a view of making room for additional factory buildings at that point.

Atwood & McCaffrey, Pittsburgh, Pa., operating brass foundry and machine shops, recently made a shipment of a carload of goods by express to the Alabama Steel & Ship Building Company at Ensley, Ala.

The Playford Stoker Company, through their Pittsburgh representative, W. J. Brant, have secured an additional order from the Apollo Iron & Steel Company, Vandergrift, Pa., for 12 250 horse-power stokers, making 24 stokers of this type installed in these works. A second order for 1000 horse-power stokers was received a few days ago from the Edward Ford Plate Glass Company, Toledo, Ohio.

The Duisdieker Foundry & Mfg. Company, Pekin, Ill., are making a line of emery grinding machinery, for which they advise the demand has been brisk. The Cyclone grinding machine is made in various sizes, from a bench tool to a heavy cylindrical column machine for use on large castings and plow shapes.

The ingot mold department of the new plant of the Mesta Machine Company, at West Homestead, Pa., near Pittsburgh, will be started this week.

The machine shop of the Union Iron Works, Ottumwa, Iowa, is to be leased by the Ottumwa Box Car Loader Company for the manufacture of a device patented by Henry Phillips and William Hunt to load coal in box cars.

The E. P. Allis Company, Milwaukee, Wis., will shortly begin the erection of a building, 75 x 100 feet, on Barclay street as an addition to the National avenue shops, and this will be equipped with the newest, most improved and largest type of machines for the manufacture of pumping and blowing engines; also another shop, 50 x 100 feet, on Barclay street, as a continuation of the Barclay street machine shop. In this they will manufacture mining and saw mill machinery. They have made extensive additions to their works on their own ground, and they were obliged to rent buildings in Buffalo, because other foundries in Milwaukee and elsewhere, to which they have given their excess work, are so crowded with orders of their own that they can no longer help the Allis Company out.

The foundry of C. L. Stuck, Hubbardstown, Mich., has been burned, with a loss of $6000.

A malleable iron foundry is to be established at Grand Rapids, Mich.

The Huber Mfg. Company, Marion, Ohio, are erecting a boiler shop 50 x 250 feet. It will be equipped with the most improved machinery for boiler making.

The Sharon Steel Company, which concern will erect a large basic open hearth steel plant and blast furnace at Sharon, Pa., have placed nearly all their contracts. With the Lloyd Booth Company, Youngstown, Ohio, have been placed a contract for one blooming mill, with tables, one manipulator, one ingot tilter, one hydraulic shear, with approach, and shear tables.

Bullock Electric Mfg. Company of Cincinnati report sales for the month of September involving 61 machines, ranging in size from 3 to 150 kw. Among the more important were 15 engine type generators for United States Army transports and ten 50 horse-power motors to operate at 200 r.p.m. for Dick, Kerr & Co. of London, England. Several repeat orders were received, among them being the following: Maryland Steel Company, Baltimore, Md; Atlas Cement Company, Northampton, Pa., and Missouri Lead & Zinc Company, Joplin, Mo.

Stedmans Foundry & Machine Works, Aurora, Ind., state that their entire plant is being operated to its fullest capacity, so much so as to necessitate an increase in their working force. A recent large shipment of machinery was made to Australia, while the bulk of their product has been for home consumption.

The Jenckes Machine Company, Sherbrooke, Quebec, Canada, report the outlook for next year's business quite promising. The increasing stability and permanence of the mining industry in British Columbia and Nova Scotia, as well as Western Ontario, has resulted in a demand for a higher grade of power machinery for mine use, and they state that many of the equipments they supply for such purposes now embody high grade compound condensing Corliss engines and accompanying machinery of as high efficiency as is required in less remote localities, and where competition renders the strictest economy necessary.

The Canadian Rand Drill Company, Sherbrooke, Quebec, Canada, are just about to occupy their new shops. The machinery is being erected as fast as possible, and a considerable increase in the equipment will take place, everything being laid out on strictly modern lines.

Hardware.

The Bignall Company, Medina, N. Y., have been incorporated, with a capital stock of $30,000, and the following officers and directors: William M. Lee, president; W. B. Robbins, vice-president; F. H. Whipple, secretary and treasurer; E. L. Sturgis and C. W. Holmes, directors. The company will succeed the Bignall Mfg. Company, making the same line of goods with the exception of soil pipe and fittings, their products comprising brass and iron pumps, cast iron sinks, skeins and boxes, &c.

The Havana Metal Wheel Company, Havana, Ill., makers of all kinds of metal wheels and running gear, report a growing demand for their product. New buildings are being erected upon their property to provide for enlarged operations.

The Keystone Woven Wire Fence Company, Peoria, Ill., have completely remodeled their plant for the economical production of their various patterns of fence netting. The new factory, with an additional equipment of machinery, will permit an increased output of about one-third. Trade is keeping up encouragingly.

A. M. Ross & Co., Ilion, N. Y., have for the present discontinued the manufacture of shovels and scoops.

In addition to the Government order of horse nails recently shipped by the Standard Horse Nail Company of New Brighton, Pa., to Manila, this concern forwarded a large consignment for depot quartermaster at Havana, Cuba.

Miscellaneous.

The American Steel & Wire Company have awarded a contract for the erection of 1000 coke ovens on the Mosier Farm, in Fayette County, to Owen Murphy, a contractor, of Mt. Pleasant, Pa. The ovens are to be completed within ten months from the starting of work.

The Berger Mfg. Company, Canton, Ohio, manufacturers of sheet metal roofing, siding and ceiling, eave troughs, conductor pipe, have the largest sheet metal plant in the world, and have been operating overtime since March. The concern have very large orders on hand.

The Columbia Bridge Company, lately organized at Edinburg, near Ellwood City, Pa., have a capital of $30,000. The stockholders are all of Pittsburgh and are as follows: George W. Knoyf, John C. Oil, Chas. M. Neeld, A. Kountz, Joseph Kountz and H. L. and J. L. Kountz.

Within a short time the receivership of the Walter A. Wood Mowing & Reaping Machine Company of Hoosick Falls, N. Y., will terminate and the reorganization company will be in control. At the wind up of the receivership the company will have paid every dollar of their floating indebtedness and every creditor in full with interest in full. Much credit is given to the receivers, Seymour Van Santvoord and Danforth Geer, through whose efforts the business will be restored to a firm basis. The officers state that the company's business is in good condition, and the expectation is that the trade will be quite as large the coming year as for the season just passed, which was the biggest done during the receivership. The securities which the company will issue for their new capital have been taken not only by their stockholders and bondholders, but very generously by local banks, country banks and individuals who thus far have had no financial interest in the business.

The Lafayette Bridge Company, Lafayette, Ind., whose plant was recently burned, have decided to rebuild as soon as their insurance claim is adjusted. Their expectation is to operate as an independent company, although arrangements had begun for merging their interests into the bridge consolidation.

The Berlin Iron Bridge Company of East Berlin, Conn., are shipping to Mexico the structural iron material for the roof for a building 80 feet wide and 255 feet long. This roof is to be erected on masonry walls and the building is to be used for a paper mill for the San Rafael Paper Company, City of Mexico. This is a duplicate of work furnished these parties something over a year ago.

The Eureka Mfg. Company of Pittsburgh have been organized, with a capital stock of $50,000, and application has been made for a charter. It is the intention of the new concern to engage in the manufacture of enameled bathtubs at Blairsville, Pa. Chas. A. Bradley, president of the Pittsburgh Stove & Range Company, and John Fitzgerald, also of that city, are identified with this new concern.

E. W. Bliss Company have recently changed their Western office from 96 West Washington street to 22-24-26 South Canal street, Chicago. The new office will carry a line of their standard machines and the superintendent in charge, W. S. Smith, will be pleased to communicate with any interested parties in that section.

The directors of the Pittsburgh Stove & Range Company of Pittsburgh have appointed Geo. A. Simpson manager of one of the works in Allegheny which will be put on the manufacture of gas stoves and ranges exclusively. Some extensive improvements will be made to these works.

The Alabama & Georgia Iron Company have been incorporated at Trenton, with a capital of $1,300,000, of which one-half is 7 per cent. cumulative stock. This is the company who have acquired the property of the Cherokee Iron Company and the Augusta Mining Company, Eugene Zibberman of Cincinnati, Ohio, and Rogers, Brown & Co. being interested.

. The eighteenth annual meeting of the American Street Railway Association began in Chicago on Tuesday.

The Iron and Metal Trades

A Comparison of Prices

Chicago.

Iron.

Car Material.

Structural Material.

Plate.

Merchant Pipe.

Steam

Merchant Steel.

Pipes and Rods.

Rails and Track Supplies.

Coal Material.

Metals.

Tin Plate.

The Iron and Metal Trades.

Conditions in the Iron trade are becoming more and more puzzling. While assertions as to the adverse effect of high prices on consumption are growing more numerous, and there is more talk of resistance to further advances, the large interests are assuming an attitude of greater aggressiveness. The highly interesting movements in the vessel transportation on the Lakes are complex, but find their explanation in the effort on the part of large consumers of Ore to keep down Lake rates, while the ship owners are trying to establish a high figure in order to make it apply on old contracts. Charters for a heavy tonnage for the 1900 season have been made at $1.10 and $1.25, and discussions as to coming Ore prices are being heard. A rise from the $2.60 basis this year to $5 and $5.25 is spoken of. Apparently little has been done in Furnace Coke for the first half of 1900, but $3 is mentioned, while a considerably lower figure is spoken of for the second half.

Some large movements are reported in the intermediate materials in the Central West. In Bessemer Pig there have been two sales aggregating 80,000 tons. This does not include a 50,000 ton furnace contract in the Northwest.

One block of 50,000 tons of Billets was placed, for delivery during the first half. There are very heavy Billet inquiries in the market, one interest alone asking for over 100,000 tons. The attitude of the principal producers will probably be defined at an early date, and an important conference is talked of.

In some of the Finished lines very large requirements for 1900 are under consideration. Thus the largest consuming interest of Merchant Pipe is said to have placed a very large order, and is now in negotiation for the Skelp for a part of it, the quantity of the latter figuring up to about 75,000 tons, the greater part of it Steel.

The announcement has been unofficially made that dating from Saturday, Standard Steel Rails are to be advanced from $33 to $35 at mill, by the makers, for any orders entered after that date for 1899 or 1900 delivery. There is good reason to believe that this is the case. It is understood that some very good orders have again been placed lately, and that a large tonnage will be entered during the next few days. Report has it that the inquiries now on the market aggregate 250,000 tons.

The Wire interest has made a further advance of $3 per net ton on Wire and on Nails, and reports are current that Structural Material is to be brought into line at an early date.

It will be observed, therefore, all the great interests are committing themselves to a continuance of the rise, at least so far as the first half of next year is concerned. It would be idle to deny that the conservative element in the trade deplore this pronounced tendency, since it increases the danger of a check and threatens to make the inevitable decline, when it does come, more abrupt and demoralizing.

The prospects of the export trade have been further darkened by the rise in ocean freights, due to the withdrawal of many vessels into the carrying of men and supplies for South Africa.

In the Metal trades the principal event is the weakening in Lake Copper and the easing off in Tin.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Oct. 18, 1899.	Oct. 11, 1899.	Sept. 20, 1899.	Oct. 19, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	**$22.75**	$22.75	$22.50	$10.75
Foundry Pig, No. 2, Southern, Cincinnati	**20.75**	20.75	20.20	9.75
Foundry Pig, No. 2, Local, Chicago	**23.00**	23.00	22.00	11.00
Bessemer Pig, Pittsburgh	**24.50**	24.00	23.25	10.40
Gray Forge, Pittsburgh	*20.50*	21.00	21.50	9.25
Lake Superior Charcoal, Chicago	25 00	25.00	25.00	11.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh	**39.00**	38.50	38.00	15.50
Steel Billets, Philadelphia	*40.00*	40.50	41.00	18.00
Steel Billets, Chicago	.....	.....	41 00	17.00
Wire Rods, Pittsburgh (nominal)	**48.00**	46.00	45.00	22 00
Steel Rails, Heavy, Eastern Mill	**35.00**	33.00	33.00	18.00
Spikes, Tidewater	**2.65**	2.65	2.50	1.40
Splice Bars, Tidewater	**2.25**	2.25	2.15	1.05
OLD MATERIAL:				
O. Steel Rails, Chicago	**20.00**	20.00	18.50	8.00
O. Steel Rails, Philadelphia	**21.50**	21.50	21.00	10.50
O. Iron Rails, Chicago	.....	35.00	28.00	13.00
O. Iron Rails, Philadelphia	**25.00**	25.00	23.00	12.50
O. Car Wheels, Chicago	20.00	20.50	20.00	11.25
O. Car Wheels, Philadelphia	**21.00**	21.00	19.00	10.25
Heavy Steel Scrap, Chicago	*17.00*	19.00	17.50	7.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	**2.10**	2.10	2.05	1.10
Common Iron Bars, Youngstown	**2.25**	2.25	2.10	95
Steel Bars, Tidewater	2.40	2.40	2.40	1.15
Steel Bars, Pittsburgh	*2.35*	2.35	2.40	1.00
Tank Plates, Tidewater	3.00	3.00	3.00	1.27½
Tank Plates, Pittsburgh	*2.75*	2.75	2.90	1.12½
Beams, Tidewater	2.40	2.40	2.40	1.40
Beams, Pittsburgh	2.25	2.25	2.25	1.20
Angles, Tidewater	2.40	2.40	2.40	1.20
Angles, Pittsburgh	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh	*2 10*	2.10	2.25	1.10
Skelp, Sheared Iron, Pittsburgh	*2.50*	2.40	2.65	1.20
Sheets, No. 27, Chicago	*3.15*	3.15	3.35	2.00
Sheets, No. 27, Pittsburgh	*3.10*	3.10	3.15	1.85
Barb Wire, f.o.b. Pittsburgh	**3.55**	3.40	3.40	1.70
Wire Nails, f.o.b. Pittsburgh	**2.95**	2.80	2.80	1.35
Cut Nails, Mill	2.50	2.50	2.50	1.10
METALS:				
Copper, New York	*18.00*	18.37½	18.50	12.50
Spelter, St. Louis	*5.20*	5.35	5.40	4.80
Lead, New York	4.60	4.60	4.60	3.80
Lead, St. Louis	*4.50*	4.50	4.52½	3.65
Tin, New York	*30.50*	31.90	32.00	17.90
Antimony, Hallett, New York	9.75	9.75	9.75	9.00
Nickel, New York	36.00	36.00	36.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York		4.82½	4.82½	4.82½ 2.75

Chicago. (*By Telegraph.*)

Office of *The Iron Age*, 805 Fisher Building,
CHICAGO, October 18, 1899.

Railroad companies are placing heavy orders for all kinds of Track Material and equipment. The high prices appear to be accepted as inevitable, notwithstanding the reports that a policy of resistance was to be adopted. Orders for Rails already placed cover a large tonnage, and Track Fastenings are being freely purchased. Arrangements are being made for bridges by companies that a short time since announced a determination to put up wooden bridges rather than pay ruling prices for Steel. An order for cars is stated to be pending which alone would fill one large car works for six months. The Implement trade is also promising to far exceed the expectations of manufacturers. The outlook is not only most promising from domestic sources, but export business is developing beyond anticipation. A single order for export recently received by a local Implement company calls for 14,500 high class farm machines. A slight falling off is observed in the demand for some finished products, but this is regarded as incidental to the season. No apprehension is entertained of weakening in prices. Higher figures are in fact being made on some products; notably, $3 per ton advance has just been announced on Wire products, including Wire Nails.

Pig Iron.—The business of the past week was of large volume, including a number of contracts for round lots running from 2000 to 5000 tons each. This business is mainly for delivery next year, but a sharp demand is still experienced for early delivery. Furnace companies are either considerably behind on deliveries, or else are obliged to blow out stacks for relining, causing buyers to continually reappear in the market to cover immediate necessities. The shortage of Pig Iron for malleable purposes is shown by the closing for several days last week of a large malleable plant for lack of Iron. The Iroquois Furnace was blown out last Friday for relining, which will require about six weeks. This considerably reduces the local supply of Iron. Pig Iron sellers are looking for still higher prices, and predict a greater shortage of Iron in the first six months of next year than now obtains. They assert that enough large buyers are holding off in the hope that prices may weaken

to more than take up all the free Iron available when convinced their expectations will not be realized. Some of these buyers who have been interviewed express no fear of a shortage, but are confident that they will not lose anything by waiting a little longer for developments. The inquiry for Iron is still heavy, and much more business is in sight. We quote for cash as follows:

Lake Superior Charcoal	$25.00	to	$26.00
Local Coke Foundry, No. 1	23.50	to	25.00
Local Coke Foundry, No. 2	23.00	to	23.50
Local Coke Foundry, No. 3	22.50	to	23.00
Local Scotch, No. 1	23.50	to	25.00
Ohio Strong Softeners, No. 1	24.50	to	25.00
Southern Silvery, according to Silicon	....	to	26.00
Southern Coke, No. 1	22.65	to	23.65
Southern Coke, No. 2	21.65	to	22.65
Southern Coke, No. 3	20.90	to	21.65
Southern Coke, No. 1 Soft	22.65	to	23.65
Southern Coke, No. 2 Soft	21.65	to	22.65
Foundry Forge	20.40	to	21.15
Gray Forge and Mottled	20.40	to	21.15
Southern Charcoal Softeners, according to Silicon	21.65	to	25.65
Alabama and Georgia Car Wheel	24.65	to	25.65
Malleable Bessemer	....	to	25.00
Standard Bessemer	....	to	25.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon	31.80	to	32.50

Bars.—While a good tonnage of Bar Iron orders is being entered, and inquiries are in hand for good sized contracts for future delivery, manufacturers state the amount of business now coming up is not so large as during previous weeks. The feverish demand has abated, and matters are assuming a more natural shape. They welcome this condition, believing that it will be better for all concerned if the mills can catch up a little closer on deliveries. Prices on mill shipment of Common Iron are maintained at 2.30c. to 2.40c., Chicago, but 2.60c. has been realized for prompt shipments. Soft Steel Bars have been active, with some large tonnage placed, and a sharp demand for early delivery on small lots. This has made a wide range of prices on mill shipments. Some of the leading mills have taken business in this way as high as 2.65c., Chicago, while others quote 2.35c. to 2.45c., half extras. Occasionally a lower price is made on a limited range of sizes which can be rolled on continuous mills that can be operated to best advantage on a long run on a single size. Mill shipments of Hoops are held at 2.65c., base, Chicago, for Bands. Jobbers report an unabated demand from warehouse, with shipments of this character daily running up to figures beyond all previous experiences. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c. to 3c. for Soft Steel Bars, and 3.65c. for Norway and Swedish Iron.

Car Material.—Large inquiries for Car Axles have been a noteworthy feature of late, but makers of Steel Axles are so full of work that they have refused to take more business. A local car works are stated to be considering a proposition to build a large quantity of cars for a leading line which would take their entire capacity for six months.

Structural Material.—Considerable business is being done in small lots, which in some cases run as high as 500 tons. This business includes numerous orders from bridge works, and occasionally a fair order for a building. Among recent sales was one of 500 tons of 18-inch Beams for a heavy warehouse. Prospects are bright for larger contracts with bridge works. Railroads are contemplating improvements in spite of existing high prices. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 3.15c. Stocks of Beams in local yards have practically been exhausted. Smaller sizes than 12-inch Beams are bringing 4c. to 5c. per lb. in small lots.

Plates.—Inquiries which could not be entertained have been received here from large consumers desiring supplies of Plates for the next six months of next year. Some of these inquiries have come from localities as far distant as the Atlantic seaboard. Jobbers report a moderate decrease in their trade, which is to be expected at this season. Mill shipments are now quoted as follows, Chicago, for reasonable deliveries: Tank, 3.15c. to 3.25c.; Flange, 3.50c. to 3.60c.; Marine, 3.60c. to 3.75c.; Fire Box, 4c. to 5½c. Jobbers quote Tank in small lots at 3.40c., and Flange, 3.65c.

Merchant Pipe.—The strong demand continues for the standard sizes of Merchant Pipe. Manufacturers now quote mill shipments of carload lots 50 and two 10's and small lots 50, 10 and 5. They are as usual receiving many specifications from buyers who hope to have them entered at old prices. Merchant Steel Boiler Tubes are quoted as follows: 1¼ to 1¾ inches, 35 per cent. off on Steel or Iron; 2 to 2¾ inches, 50 per cent. off on Steel and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

Sheets.—The demand for mill shipments has not been large for some little time, but a few sales were reported recently for deliveries running into next year. Prices of Black Sheets have not declined, but those quoting highest rates have now come down to the level of other manufacturers. Mill shipments are therefore quoted at 3.15c. to 3.30c., Chicago, for No. 27 Black. Galvanized Sheets are selling from mill at 70 and 5 to 70 and 10 and 5 per cent. off, with 15c. freight allowance. Jobbers have seldom had such a heavy demand for Galvanized Sheets as they are now enjoying. Their stocks are large, so that the trade is being well supplied. Jobbers quote small lots from stock at 3.40c. to 3.50c. for Black, and 70 to 70 and 5 per cent. for Galvanized.

Merchant Steel.—This branch of trade now shows a tendency to quietness, which is usual at this time of year. Mill shipments, Chicago delivery, are quoted as follows: Smooth and Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.70c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

Billets and Rods.—The local Steel makers have had recent inquiries for a large lot of Billets for delivery in the first half of next year, which they are unable to consider, as they are finishing all their Steel themselves. Small lots of ordinary Bessemer Billets are selling here from warehouse as high as 2.10c. per pound. No quotations are being made on Wire Rods, the local mills now being behind on deliveries and trying to catch up.

Rails and Track Supplies.—Good orders have been entered for Standard Sections of Steel Rails for next year's delivery at prices ranging from $33 to $36, according to quantity. The local mills are now evidently pretty well sold up for the early part of next year, as business is being obtained by Eastern mills for such deliveries which would hardly go to them if the Western mills were not in that condition. Large orders have also been placed for Light Rails, which are quoted at $33 to $40 for round lots. The impression is abroad that an early advance is to be made on Heavy Rails. Much business is also being done in Track Fastenings, numerous contracts being reported for Splice Bars, Spikes, &c. Track Fastenings are quoted as follows: Steel Fish Plates, 2.05c. to 2.15c.; Iron Fish Plates, 2.50c. to 3c.; Spikes, 2.75c. to 2.80c.; Track Bolts, with Hexagon Nuts, 3.80c. to 3.85c.; Square Nuts, 3.65c. to 3.70c.; Steel Links and Pins, 3c.; Iron Links and Pins, 2.95c.

Old Material.—From present indications the top of the market, for a little while at least, was reached last week for certain classes of old material. It is somewhat difficult to quote the market at present, owing to the conflicting views of buyers and sellers. Large buyers seem to have determined to get prices down to a lower level, and in this they are aided by larger quantities of material now being received from a wide territory on account of the tempting rates recently ruling. It is possible that Old Iron Rails may be maintained at high figures on account of their scarcity, but this remains to be seen. Large consumers are offering only $28, and say they will pay no more. Dealers' selling quotations are as follows, per gross ton: Old Steel Rails, mixed lengths, $20; Old Steel Rails, long lengths, $23 to $24; Relaying Rails, $25 to $27.50; Old Car Wheels, $20 to $20.50; Heavy Melting Steel Scrap, $17 to $18; Mixed Steel, $13.50 to $14. The following selling prices are per net ton: No. 1 Railroad Wrought, $25; Dealers' Forge, $18 to $19; Fish Plates, $25 to $26; No. 1 Mill, $14.50 to $15; Heavy Cast, $16 to $16.50; Stove Plate, $11.50; Railroad Malleable Cast, $16.50; Agricultural Malleable Cast, $13.50 to $14; Iron Car Axles, $30; Horseshoes, $18 to $19; Cast Borings, $10 to $10.50; Steel Axle Turnings, $13.50 to $14; Iron Axle Turnings, $12.50 to $13; Machine Shop Turnings, $12 to $12.50.

Metals.—Lake Superior Copper is slightly easier, carload lots being quoted at 18⅝c. Western is unchanged at 17⅞c. Spelter is unsettled, with 5.35c. about the ruling quotation. Pig Lead is in fair demand, with the largest producers holding at 4.55c., and some outside offerings at 4.50c. The consumption is extraordinarily heavy.

Tin Plate.—The situation shows no improvement in the supply. Manufacturers are still unable to make deliveries fast enough to keep the trade properly stocked. Jobbers are finding the demand running far beyond their expectations. Stocks are short in every grade. Accumulations in the hands of weak or timid holders were some time since worked off and full prices are now ruling on everything.

Philadelphia.

Office of *The Iron Age*, Forrest Building, PHILADELPHIA, PA., October 17, 1899.

The situation is not materially different to what it was a week ago. In some lines prices are slightly higher, in others they are unchanged, but in no case lower. There is a good deal of guessing going on in regard to the future, and there is plenty of margin on both sides of the question. The one unmistakable feature, however, is the immense demand for all kinds of Iron and Steel, and the absolute dearth of stocks. This removes all fears of weakening in prices during this year, but leaves the more distant future open to all sorts of opinions. The feeling in regard to this matter appears to be somewhat intermittent. Some days there is a disposition to buy for long deliveries, then there comes a period of hesitancy, which continues until a pressure for material creates a fresh buying movment, and so it goes from time to time, the final outcome so far having always been the same—viz., somewhat better prices. At the moment another period of hesitancy is in evidence, which, while it may not result in advantage to buyers, may perhaps be of somewhat longer duration. So far as supply and demand is concerned there is certainly nothing to encourage the idea of lower prices in the near future. This appears to be conceded on all sides. The important question is, how about next year? A great deal of business has already been placed, probably more for long delivery than in any former year, but of course the supply of Iron will also be greater than in any former year, so that the real question is one of proportion. This leads to a consideration of what is to become of all the Iron that is to be produced. Based on the furnace output, as shown in the last issue of *The Iron Age*, we shall have considerably more than 14,000,000 tons of Pig Iron to take care of during 1900. How is it to be done? The export trade appears to be pretty well cut down by the advance in prices which have been made on this side, and this will be still further emphasized by the very great advance in ocean freights which is sure to follow the withdrawal of vessels for war purposes. The main dependence, therefore, must be in home consumption. In this respect the outlook is extremely satisfactory. The country was never more prosperous, never had so large a population, and was never so well situated pecuniarily. The first impetus toward these improved conditions came from an enormous and totally unexpected foreign demand. The resources of the country have been taxed in meeting the calls that have been made for Iron and Steel, but it may be noted that not very much has been done (comparatively speaking) in adapting ourselves to the conditions which will be necessary to meet future requirements. The heavier train loads which are among recent usages will render new rolling stock and new road bed equipments a necessity. Larger and heavier locomotives, larger and heavier cars, and heavier rails will displace equipments which are already badly run down by the wear and tear of the enormous business of the past couple of years. This feature is one of great importance, and may be reasonably expected to perpetuate the demand for Iron and Steel for a considerable time. The same may be said in regard to bridge and ship building, and for the same reasons may be expected a long period of activity in these lines. In the meanwhile the export trade is not lost, and by the time we are ready to take it up again there will doubtless be plenty of business to be had. Much more might be said on similar lines, but it is pretty clear that the demand will be large, and prices not much (if at all) below those now ruling.

Pig Iron.— Business has been on a pretty even keel during the past week. Consumers could get Iron when they wanted it, and producers could find buyers at full prices without going out to seek them. The situation could hardly be more satisfactory than it is, but as we have already said, both sides want to know what is to be done next year. So far as regards actual sales it does not appear that there has been much gain on either side. The advantage, if any, is slightly in favor of the seller. No concessions have been made from last week's prices. Some holders have stiffened up—possibly 25c.—but as a rule good buyers have been able to get all they want on the basis of $23 for No. 2 X Foundry, and other grades in proportion. Buying has not been very heavy, but there is a good deal of inquiry, and quite a lot of Iron has been offered on short options. It is not entirely clear how much will be taken, but sellers are not uneasy. They have a great deal of Iron sold, they have little or nothing on furnace banks, and so long as these conditions prevail they are not likely to take back water to any extent. Cost is going to be considerably higher during the coming year, and while present prices are no doubt high enough to leave a considerable margin, it is not likely that advantages of this kind will be thrown away unnecessarily. Shortages during the lean years past have to be made up, and provision must be made for the lean years to come, so that until there is some distinct probability of an actual and unmistakable surplus of Iron producers will be in no haste to reduce prices. So far as can be seen at the present time the supply of Iron will be very meager for some time to come—that is to say, there will be no surplus—consequently there is no reason for expecting prices to be lower than they are to-day, and as a matter of fact, with such a beggarly reserve as there now is, prices might be pushed to considerably higner figures. There is no disposition to do that, however, the general feeling among producers being that prices are high enough, and not to be worked to higher limits unless in response to future developments. The range of prices may be given as follows for Philadelphia, and its equivalent: No. 1 X Foundry, $23.50 to $24; No. 2 X Foundry, $22.75 to $23; No. 2 Plain, $21.25 to $21.75; Standard Mill Iron, $19.50 to $20; Basic, $23.25 to $23.50; Bessemer, $25 to $26; Low Phosphorus, $27.50 to $28.

Muck Bars.— Nominal at $32.50 to $33.25, f.o.b. cars sellers' mills.

Billets.— There is some business doing, but not in very large lots. Sales have been made at $42, and that is about as well as can be done for this year's deliveries. For the first half of next year $40 could be shaded, but neither side show much interest in the matter at the present time.

Plates.— The demand is very satisfactory, and continues as before to come from all classes of consumers and from all parts of the country. Mills are crowded with work, and although the output was never as large as it is to-day, it is not near sufficient to meet current requirements. Prices are firm, and for guaranteed deliveries premiums of $2 to $3 or $4 per ton are frequently bid, although the usual quotations are as follows (seaboard or equivalent points): Steel Plates, ¼-inch and thicker, 3.10c. to 3.15c.; Shell, 3.25c. to 3.30c.; Flange, 3.40c.; Fire Box, 3.50c.; Charcoal Iron Plates, C. H. No. 1, 3.15c.; Best Flange, 3.65c.; Fire Box, 4.15c.

Structural Material.— There is a good demand for Structural Shapes, and mills make no material headway against the mass of work they have on hand. Orders come in very freely, and prospects indicate full employment for an indefinite period. Prices are unchanged, but subject to several dollars per ton premium for guaranteed early deliveries. Nominal prices at seaboard are as follows: Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

Bars.— There is no abatement in the demand, and some of the leading mills have turned down a large amount of business during the past week or two. Heavy purchases have been made in the East for Chicago, St. Louis, Cincinnati and other distant points, and still more would be taken if it could be placed at 2.1c., f.o.b. cars sellers' mills. Some of the newly started mills accept that figure, others quote 2.15c. and 2.20c. and get it easily for prompt deliveries. General quotations are about as follows for city or nearby deliveries: Ordinary Bars, 2.05c. to 2.10c.; Refined Bars, 2.15c to 2.25c.; Test Bars, 2.30c. to 2.35c.; Steel Bars, 2.60c. to 2.75c.

Sheets.— There is a very good demand for thin Sheets, but there is hardly as much pressure as there was for the lower numbers. Mills have plenty of work, however, and are being run to their fullest capacity. Prices are as follows (Common Sheets two-tenths less): No. 10, 3.15c. to 3.20c.; No. 14, 3.30c.; No. 16, 3.40c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.70c.; No. 28, 3.75c. to 3.85c.

Old Material.— The demand is very active and prices are higher all around. In some cases very extreme figures have been realized for Western shipments, but for the local trade buyers are not willing to exceed the following quotations for deliveries in their own yards unless for exceptional lots. Cast Borings, $13.75 to $14; Wrought Turnings, $14.75 to $15; Machinery Cast, $17.50 to $18; Old Car Wheels, $21 to $21.50; Heavy Steel Scrap, $20 to $20.50; Steel Rails, $21.50 to $22.50; Iron Rails, $25 to $26; Choice Yard Scrap, $21 to $22; No. 1 Railway Scrap, $25 to $26; Iron Axles, $27 to $28; Steel Axles, $26 to $28. Heavy Steel Shafting sold at $38, and Light Steel Shafting at $31.

A press dispatch from Leadville, Col., states that on the 16th inst. a special train with 40 cars, carrying 1200 tons of manganese ore, left that point consigned to the Illinois Steel Company. The cars were decorated with banners of red, white and blue, bearing inscriptions of diverse character as to the enormous manganese output of Colorado, and many other devices. The rear cars carry pictures of McKinley and Dewey. Colonel George W. Cook, a leading mining man of the State, is the promoter of the advertising project and ran the train through to Chicago on the Denver & Rio Grande, Union Pacific and Chicago & Northwestern on special time.

St. Louis. (*By Telegraph.*)

Office of *The Iron Age*, 512 Commercial Building, St. Louis, October 18, 1899.

Pig Iron.—Compared with the heavy tonnage written up in months past this week's demand may be stated as light. It is, however, in excess of sales for same period last year. Predictions are still made that prices will advance long before any weakness develops. Soft Iron for quick sale is coming to market occasionally, but it is reported as rather an accidental product. Its coming is a relief to furnace representatives, as it gives them something unlooked for to sell for immediate wants. Lately some little Iron has been offered by furnaces which expect to be making Iron by the turn of the year, but the trade do not look for much of an effect on total product. Repairs must be made to linings and bosh, as many of present stacks have been in blast an unusual length of time. Even foundry cupolas that can be relined in days, instead of weeks, have been kept in service to a critical point until it was almost a case of Iron and Iron. Coke is in anxious demand, and the situation considered serious. Foundrymen have long been accustomed to surplus Coke stock. The present scarcity may draw more attention to need of covering for future runs. Last week's prices of Pig Iron remain unchanged. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern, No. 1 Foundry	$22.25 to $22.50
Southern, No. 2 Foundry	21.25 to 21.50
Southern, No. 3 Foundry	20.25 to 20.50
No. 1 Soft	22.25 to 22.50
No. 2 Soft	21.25 to 21.50
Gray Forge	20.00 to 20.25

Bars.—No great let up is noted in wants to mills and deliveries on past orders are now coming forward somewhat better. Jobbers by no means are having their stock filled up as to assortment, but must take shipments as they can be made. Mill prices remain at 2.35c., base, half extras, East St. Louis. Small trade continues good at 2.75c. to 2.90c., full extras, for Common Iron. Nothing new in Steel Bars, which are quoted by mills at from 2.35c. to 2.50c., base. Jobbing trade quote 3c.

Rails and Track Supplies.—The railway supply trade is reported in fine condition except as to delivery. Prices have been evenly maintained, and show no advances this week. We quote: Splice Bars, Steel, 2.10c. to 2.20c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.65c.; with Hexagon Nuts, 3.90c.; Spikes, 2.75c.; Steel Links and Pins, 3c. to 3.10c.

Pig Lead.—A sale of 100 tons Desilverized is reported at 4.50c. The market all around is somewhat lower than last week. Soft Missouri was bid for at 4.47½c. Lead Ore remains unchanged at $27 per 1000 lbs.

Spelter.—If anything a 5c. lower price is spoken of this week, and range placed at 5.20c. to 5.35c. Nothing accurate can be reported, and no two factors give same opinion. Prices are largely guess work. Even actual consumers are not in evidence, and smelters are making no efforts to sell. The next week or two may show change in situation as between Ore producers and smelters. The shut down is being observed by a large percentage of mine owners. Zinc Ore sold at $43.50 per ton as the top price.

Cincinnati. (*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main streets, Cincinnati, October 18, 1899.

In Pig Iron circles, especially in regard to next year's deliveries, there is an exceedingly quiet situation. With the exception of a very few orders for 300 to 500 tons for first quarter's delivery, the business of the week has been confined to such small lots as have come up n the market from unexpected sources, and which have been sold independently of regular quotations at higher or lower figures as the exigencies of each particular case demanded. There are a few cases reported in which consumers who bought some months ago beyond their actual needs have thrown their surplus on the market, believing the time ripe for a realization of profits. Other speculative Iron is also being offered in moderate quantities, and thus with unexpected surplus grades from the furnaces themselves the actual needs of the present are being supplied. Buyers are showing a belief more or less confidently expressed that from now on Iron will be cheaper rather than higher, and they are backing up the hope within them by refusing to show much interest at the present prices. Agents at this point are somewhat divided in their views of the real situation. While there is no doubt expressed as to to-day's quotations being the minimum which are being considered by the furnaces themselves yet what are claimed to be "outside" lots are being sold 25c. below these figures (except as to Mill Irons, where the minimum is as quoted). Thus an idea as to the market value is being established, which will have to be overcome when buyers again present themselves. In their talk some agents confess to a feeling that prices will decline a little from now on, though at the same time regarding the situation strong enough to keep from anything bordering on a slump. Other agents say that a great number of buyers have not as yet covered their wants for the first half of 1900, and this, with the sold up condition of the furnaces for the same period, the slow increase in production, the oversold condition for next four months, and the light stocks on hand, will beyond question keep the market strongly at its present level for months to come. The only certain deviation from this variance of opinion is that theoretically at least the market is losing the hard ring it had two months ago. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$21.75
Southern Coke, No. 2	20.75
Southern Coke, No. 3	19.75
Southern Coke, No. 1 Soft	21.75
Southern Coke, No. 2 Soft	20.75
Southern Coke, Gray Forge	$19.25 to 19.50
Southern Coke, Mottled	19.25 to 19.50
Ohio Silvery, No. 1	30.00
Ohio Silvery, No. 2	29.00
Lake Superior Coke, No. 1	23.50
Lake Superior Coke, No. 2	22.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	$23.25
Lake Superior Car Wheel and Malleable	25.00

Plates and Bars.—There is no weakening reported here, and new business is said to be very active and quotations strongly sustained. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

Old Material.—The market is active and strong with higher quotations for Axles and Iron Rails. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, $21 to $22 per net ton; Cast Scrap, $15 to $15.50 per gross ton; Axles, $26 to $27 per net ton; Iron Rails, $28 to $29 per gross ton; Car Wheels, $19 to $20 per gross ton.

Birmingham.

Birmingham, Ala., October 16, 1899.

The past week was entirely devoid of any interesting incidents in the Iron market. It was a steady market with nothing to break the monotony of prices, and an ordinary run of business. Sales trenched close on production, though there were no large transactions. The demand seemed to be proportionately larger for Mill and Soft grades than for the other grades. There was more or less inquiry for Gray Forge which could not be satisfied, as the deliveries desired were not approved. For the Soft grades also there seemed to be special inquiry. But the majority wanted deliveries ahead, not beyond the first half of 1900, and on this rock they split. There was some business taken for the last half of 1900, but in magnitude it was only moderate. Altogether, one can only say of the market it was uninteresting. Concerning quotations there is no change. For No. 2 Foundry the range is $17.50 to $18.50, with the bulk of the sales $18 to $18.50. Gray Forge is $15.75 to $16, according to circumstances. The other grades at the usual difference.

Owing to the difficulty in procuring cars for shipments ready there is a slight accumulation of Iron at furnace yards, but that means only a shortage of cars and nothing more. In all likelihood this will grow to the detriment of the buyers who thought they had provided against their wants.

At the Steel mill, but for some few minor deficiencies in the detail work, they would be ready for operations. But they can do nothing until the deficiencies are supplied, and delay is the result, and the date for starting up cannot, therefore, be yet fixed. They have had considerable inquiry for Steel, but are declining orders until they get straightened out and ready for practical business.

The necessary papers transferring the Williamson Furnace property were signed on Saturday, thus removing it from the field of gossip. Every effort will be made to get it into blast as soon as possible. The Alabama Consolidated Iron & Steel Company have established their headquarters here with their president, Mr. Bush, in charge. The location of the Dimmick Pipe Works is announced in the daily press as being at North Birmingham. While it is probable there has been as yet no official announcement of location. The Birmingham Machine & Foundry Company announce an impor-

tant addition to their business in the statement that they will hereafter build blowing engines. This is important in view of the fact that those already in the business have such engagements that they cannot complete delivery on fresh orders inside of 12 months, and some say 18 months. This concern can take work of this character and complete orders in a few months, having no old business in this line to interfere and cause delay. They will remain in the field of work in which they have made their reputation, and by this addition they simply enlarge the scope of their work. The works now being built to replace those burned will give them the finest and most complete shops of their character in the South.

It is surprising to note the large amount of machinery being sold for use in mines and various other industries—boilers, engines, compressors, hoists, pumps, &c. It is going to new mines being prepared for operations, to old mines adopting the latest improvements and to new industries being inaugurated. Handlers of this machinery say they have never had such a business, and when they dispose of stock in any line they cannot replace, as manufacturers are behind on orders. This is mentioned as the best evidence that could be given of the activity that pervades the district.

There is great wailing and gnashing of teeth on the part of shippers at the great difficulty encountered in obtaining cars. Every single available car that can be utilized is pressed into service, leaving the demand for more unsatisfied. Some instances are given where a whole week elapsed from the filing of an order for cars until their receipt. This looks like business. Our minor industries are rushed in all lines of work. Our repair shops are full. Not a single one is up with its work, and additional jobs are being constantly added. Night shifts are being added to keep in sight of orders.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, }
PITTSBURGH, October 18, 1899. }

(By Telegraph.)

Pig Iron.— A meeting of the Valley Furnace Association is being held in Cleveland to-day, Wednesday, to take action on several large inquiries for Bessemer Iron for delivery in the first half of next year. In the past week there have been probably 50,000 tons of Bessemer Iron sold for delivery next year. One transaction is close to 50,000 tons, being on a conversion basis, the seller of the Iron being paid in Steel. The price of Bessemer Iron for delivery next year is about $23 at furnace, but up to $23.50 has been asked. Bessemer Iron for delivery this year is scarce and is bringing $24.50 to $25, Pittsburgh. Forge Iron is in fair request and prices are firm at $21 to $21.50, Pittsburgh. Foundry Iron is very firm and scarce and has sold up to $23.50, Pittsburgh. We quote: Bessemer, $23 to $23.50 at Valley furnace, for next year; Gray Forge, $20.50 to $21 at Valley furnace; No. 2 Foundry, $23.25 to $23.50; Gray Forge, $21 to $21.50; Bessemer, $23.75 to $24.50, the lower price being for Iron for next year and the higher price for Iron for this year. We note sales of about 50,000 tons at $23, Valley furnace. Also a sale of 5000 tons of Gray Forge for delivery in the first half at a price slightly less than $20.50, Valley furnace.

Billets.— The Steel market is firm, but in the past week sales have been mostly for small lots, ranging from 500 to 1000 tons. For orders of this kind from $39 to $40 at mill is being paid. Very high prices are being paid for Basic Steel, and it is very scarce.

Muck Bars.—The market is dull and weak, and we quote at $32, Pittsburgh.

Sheet Bars.— There seems to be a plentiful supply of Sheet Bars, and we quote at $36, delivered in Pittsburgh district.

Spelter. — Prices are about stationary, and we quote prime Western grades at 5.40c. to 5.45c., Pittsburgh.

(By Mail.)

The general tone of the Iron market is not as strong as it was several weeks ago, and on several lines of Finished Material prices are slightly lower. Bessemer Pig, by reason of the large sales recently made, is strong at about $23 at Valley furnace for the first half of 1900. Iron for delivery this year is higher and has sold in small lots as high as $25, Pittsburgh. There is a good deal of inquiry for Billets, and one round lot sold in the past week at a price equivalent to about $38, Pittsburgh. The Finishing mills, as noted last week, are anxious to sell material for first half of the year at present prices, but buyers are holding off and buying only as immediate requirements necessitate. There is nothing like a slump visible in the market, but, as noted above, on some lines prices are easier. There is also more of a disposition among some sellers to shade prices on material for delivery next year.

Structural Material.—The scarcity in Shapes noted in these columns several times continues, and as high as 3c. to 3.10c. has been paid for small lots of Beams for spot shipment. There is a good deal of tonnage being placed, but probably not as much as a month or six weeks ago. However, both local mills are filled up into next year. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.75c., Pittsburgh.

Bars.—The demand for Iron Bars does not seem to be as heavy as it was three or four weeks ago. However, the Republic Iron & Steel Company are so well filled up that they are not quoting on anything for delivery this side of January. Generally speaking, the situation is strong, but prices are no higher. We quote Common Iron Bars at 2.25c. at Valley mill in carload lots. The market on Steel Bars continues strong, and for spot shipments 2.75c. at mill has been done. We quote Steel Bars at 2.50c., but some mills are quoting 2.35c. to 2.40c. at mill for delivery in the next three or four months. Bars for prompt shipment are commanding higher prices.

Rails.— The market is firm and there is a good deal of inquiry. Considerable tonnage is expected to be booked before long, and prices are likely to be higher. We quote at $33 to $34 at mill for standard sections.

Merchant Steel.— Implement makers are pretty well covered on their season's requirements, but vehicle builders are placing good sized orders for Tire. Shipments in September were very heavy, some of the local mills considerably exceeding shipments in any previous month. Prices are fairly strong, and we quote: Machinery Steel, 2.75c. to 3c.; Hard Machinery Steel, 3c. to 3.25c.; Tire Steel, ¾ x 3-16 and heavier, 2.50c. to 2.75c., base; Toe Calk, 2.75c. to 3c.; Plow Steel, 3-16 and heavier, 2.75c.; Sleigh Shoe Steel, 2.50c. to 2.75c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Open Hearth Spring Steel, common, 3.25c. to 3.50c.; Crucible Analysis, 3.50c. to 3.75c.; Lay Steel, Rolled, 3.50c. to 4c.; Hammered, 4.50c. to 5c.; Pick, Cant Hook and Wedge Steel, 4.25c.; Tool Steel, 7c. and upward, according to quality, on which freight not to exceed 25c. is allowed. Terms are usually net 30 days, except Tool Steel, on which 60 days are allowed, or 2 per cent. discount for cash in 10 days.

Plates. — There is a good deal of business being placed, but not as much as some time ago. Some of the mills are pretty well caught up on orders and are willing to name lower prices than other mills who are sold up into next year. For this reason there is a wide range in prices of Plates, some mills quoting as low as 2.75c., while the minimum of other mills is 2.90c. to 3c. We quote: Tank, ¼-inch and heavier, 2.75c. to 2.85c.; Shell, 2.85c. to 2.90c.; Flange, 2.90c. to 3c.; Marine, 3c. to 3.10c.; Fire Box, 3¼c. to 4c., all f.o.b. at mill. As noted above, some mills are asking considerably higher prices.

Ferromanganese.— We quote domestic Ferro at $100, delivered in large lots. Small lots for prompt shipment have sold at higher prices.

Sheets.— The Sheet market is quiet and prices are about the same as noted last week. Some mills are evidently anxious to get tonnage for next year, and are naming slightly lower prices than ruled two or three weeks ago. We quote: No. 27 Black Sheets, box annealed, one pass through cold rolls, at 3.10c.; No. 28, 3.15c. at mill for delivery orders. Jobbers who have stocks of Sheets bought some time ago are naming lower prices than the mills. We quote Galvanized Sheets at 70 and 10 per cent., with 15c. freight allowance, but in exceptional cases and for very desirable orders, 70, 10 and 5 per cent. is being named.

Pipes and Tubes.— We are advised that the demand for Pipe is about as large as ever and keeps the mills fully employed. The tone of the market is strong. The National Tube Company, operating 13 different works, have an aggregate daily capacity ranging from 2200 tons to 2800 tons, predicated upon the kind of product the mills are turning out. All the plants of this concern are being operated to full capacity. We quote Black and Galvanized Merchant Pipe at 50, 10 and 5 per cent. in small lots, f.o.b. maker's mill, Pittsburgh, and 50, two

10's in carload lots, delivered. We quote Screw and Socket Joint Well Casing at 40 per cent. off; Inserted Joint, 35 per cent. off, with an optional 5 per cent. to dealers only. There is a heavy demand for Boiler Tubes and the market is strong. We quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered within certain specified territory.

Skelp. — The Skelp market is quiet and prices seem to be weak. Some of the local mills are quoting considerably higher than prices given below. We quote Grooved Iron and Steel Skelp at 2.10c. to 2.15c., and Sheared Iron Skelp at 2.40c. to 2.45c., f.o.b. buyer's mill, Pittsburgh.

Connellsville Coke.— The car shortage in the Connellsville region continues and seems to be growing worse. The enormous demand for Coke seems to be much beyond anything expected by the railroads, and they are not yet able to deliver rolling stock fast enough to haul the Coke away. Shipments have been considerably hampered in the past week, but it is expected the situation will be relieved when grain shipments stop. Last week out of 19,101 ovens in the Connellsville region, 17,988 were active and 1113 idle, the production being 190,298 tons. The active list of ovens will be larger this week, several of the plants having new ovens which will be started up. The H. C. Frick Coke Company fired 25 new ovens at the Calumet plant last week, making 250 in blast there. W. J. Rainey is preparing to fire some of the 100 new ovens at the Paul Works, and the Empire Coke Company will soon start up about 80 new ovens at Ruffsdale. There is not much demand for Furnace Coke, but a good deal of inquiry for Foundry. Prices of Furnace Coke are from $2.50 to $2.75 at oven in small lots, while Foundry Coke is from $2.75 to $3, the best brands readily commanding the higher price. There has been something done in the way of making contracts for Furnace Coke for next year, and we understand a good deal of Foundry Coke has been sold, deliveries running through all of 1900 and at very high prices.

The limited partnership heretofore existing between Edward Ascherson, Alexander Sowerby Hay, Theodore Dreier, Edward Julius Berwind, John Mitchell Clark and Charles Strong Guthrie, under the firm name of Naylor & Co., 45 Wall street, New York, and Lewis Block, Pittsburgh, was on Monday, October 16, 1899, terminated by limitation. The affairs of the old partnership in New York will be liquidated by John Mitchell Clark, William Henry Mills and John Armstrong Rawlins, who have formed a partnership under the firm name of Naylor & Co., and in Pittsburgh by Messrs. Banning, Cooper & Co., Limited, who have succeeded to the business of Naylor & Co. The new firm are composed of C. F. Banning, Samuel G. Cooper and Charles S. Guthrie, the officials being C. F. Banning, president, and S. G. Cooper, secretary and treasurer.

Cleveland.

CLEVELAND, October 17, 1899.

Iron Ore.— The excitement in the situation due to the developments of the past week has abated somewhat, but there has been no weakening of the market in any respect. Within the past few days the rush has noticeably died down on both sides, but nevertheless tonnage of very respectable proportions in the aggregate has been tied up on season contracts to carry Ore from the head of the lakes at $1.25, and from Escanaba at $1. Marquette shippers have not done any great amount of business, but sufficient transactions have been recorded at $1.15 to establish the rate at that figure. All the large shippers have secured some boats at the prevailing figures, but the majority of the chartering has been done by the Rockefeller and Carnegie interests, M. A. Hanna & Co., and Pickands, Mather & Co. Some vesselmen in Milwaukee and at a few of the smaller ports are holding off from chartering, but everything would seem to indicate that despite this fact the Ore business for next season will be pretty well cleaned up by the end of the present week. Shippers are plainly figuring upon rushing Ore down with the greatest practicable speed next year, and nearly all the charters so far made are with the understanding that the boats will go up light. Chartering for next year has occupied so much attention that little has been done in the way of present business.

Pig Iron. — Although the market is both firm and strong, there has unquestionably been during the past week something of a lull in operations. Almost all of the transactions have been for moderate amounts. In some grades there have been slight advances and in others quotations have fallen back proportionately, but in either case the fluctuation has been so slight that the rates are practically stationary as last quoted. No sales of Bessemer have been made since the large sale to the Federal Steel Company at $23.50. It is the general opinion that no more Iron can be had at that figure. A scarcity of Coke continues to be a problem in the case of a number of furnaces, and furnace interests almost without exception are being more or less seriously inconvenienced by the scarcity of cars. Foundry Iron is still quoted at $22.50 and $22 for No. 1 and No. 2 grades, respectively. Lake Superior Charcoal and Gray Forge may be said to be stationary at the nominal quotations last made. The stimulation of the market in the East is not without some effect here, and the certainty that many buyers are still uncovered for the first half of the coming year lends firmness to the situation in general.

Finished Material. — The situation shows little change, but a continued heavy buying for 1900 delivery in almost all grades and particularly in Bar Iron and Steel is noticeable. The only change in quotation was that announced after the meeting of the Pipe manufacturers during the week. Pipe in car lots will be 50 and two 10's off list and freight allowed. For less than car lots the price will be 50, 10 and 5 off at the mill, no freight allowance being made. There is a very fair inquiry regarding Structural Material for building purposes, and some inquiry regarding Rails, but no sales of any magnitude have been reported.

Old Material.— The market shows an improvement and not only is the tendency toward stiffer quotations, but some advances have already been made, which have, however, been well received. The supply is fairly adequate to the demand. Sales have been made at the following prices: Steel Melting, $21, gross; No. 1 Wrought, $22, net; No. 1 Cast, $17, net; Iron Rails, $35, gross; Car Wheels, $20, gross; Turnings, $14.50, net; Cast Borings, $12.50, net.

(By Telegraph.)

CLEVELAND, OHIO, October 18, 1899.—The Carnegie Company have just bought another large Steel steamer, the "Clarence A. Black." Her career strikingly illustrates the present conditions in lake freight market. The "Black" was built two years ago at a cost of $210,000. Pickands, Mather & Co. paid $250,000 for her, and now sell to Carnegie at $360,000. The Carnegie interest are also negotiating for the big steamer "Linn" and the schooner "Covington."

A block of 400,000 tons of Marquette Ore was covered at $1.10 on season contract.

The Iron Ore Operators' Association will meet about November 1, a month earlier than usual, to fix prices. The advance will be as conservative as possible, and Ores that last year sold in the neighborhood of $3 will probably be fixed at $3.25.

New York.

Office of *The Iron Age*, 232-238 William street,
NEW YORK, October 18, 1899.

Pig Iron.— Current sales are moderate, and the demand is more for early delivery in small lots, while the inquiry for 1900 delivery has fallen off. We hear of some resales of Pig Iron on the part of consumers, but it appears that they refer to misfit Iron. We quote as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, $23 to $23.50; No. 2 X, $22 to $22.50; No. 2 Plain, $20.75 to $21.25, and Gray Forge, $19.25 to $19.50. Southern brands are quoted: No. 1 Foundry, $23 to $23.50; No. 2 Foundry, $21.75 to $22; No. 1 Soft, $21.75 to $22.25; No. 2 Soft, $20.75 to $21.25; No. 3 Foundry, $20.50 to $21.25, and Gray Forge, $20.25 to $20.50.

Cast Iron Pipe. — Only small orders are coming out in this section, and it is a widespread conviction in the trade that present prices are seriously curtailing the consumption.

Steel Rails. — The announcement has been made that taking effect on Saturday the price of Steel Rails is to be advanced $2 per ton to $35, Eastern and Western mill. Some business of magnitude has been closed lately, and there are large inquiries in the market. We quote $35 to $36 for Standard Rails, 2.25c. to 2.50c. for Angle Bars, and 2.65c. to 2.75c. for Spikes.

Manufactured Iron and Steel.— The material for the power house for the Third Avenue Railroad has been placed, the quantity being upward of 6000 tons. There has also been placed a contract for about 1500 tons for the Adams dry goods store, and some bridge and pier material for Cuba. A good contract was also placed for

a large Southern lumber company. Reports are current that the price on Structural Material may be advanced at an early date. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c., Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 3c. to 3.10c. for Tank, 3.15c. to 3.25c. for Shell, 3.35c. to 3.40c. for Flange, 3.45c. to 3.55c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.10c. for C. H. No. 1, 3.60c. for Best Flange and 4.10c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 1.95c. to 2.10c., on dock. Soft Steel Bars, 2.40c. to 2.55c.; Hoops, 2.75c., base, delivered.

The limited partnership heretofore existing between Edward Ascherson, Alexander Sowerby Hay, Theodore Dreier, Edward Julius Berwind, John Mitchell Clark and Charles Strong Guthrie, has been terminated. A new firm, under the title of Naylor & Co., have been formed by John Mitchell Clark, William Henry Mills and John Armstrong Rawlins.

Metal Market.

Office of *The Iron Age*, 232-238 William street, NEW YORK, October 18, 1899.

Pig Tin.—There has been a very dull market here throughout the week. Quotations are easier, and to-day the prices named in store were 31½c. buyers, 32c. sellers. London closed £144 12s. 6d. for spot and £144 17s. 6d. for futures. The Billiton sale, which took place to-day, went off at a very low figure. It is reported that prices secured were 85½ florins, equaling £140 10s. c.i.f. Holland, or 30½c. in our money. It is claimed that this sale was not known in London during business hours, and a little mystery surrounds this fact. One theory is that only futures were sold.

Copper.— The market has been broken. Although the price has only fallen a fraction the general indications are toward an easier market. The price now quoted for Lake in official circles is 18¼c. sellers. We know of parties who are offering very freely, however, at 18c. for spot or futures. Electrolytic is still 17¾c. and Casting stock 17½c. London has declined a shade, and is quoted to-day by closing cables £75 10s. for spot and £75 18s. 9d. for three months' futures. Best Selected is unchanged at £80 15s.

Pig Lead.— Is dull and featureless. The market is quoted 4.60c. for any delivery this year. The prices of the American Smelting & Refining Company are unchanged at 4.60c. New York and 4.55c. St. Louis. London has declined to £16 2s. 6d., and St. Louis is quoted in the trade 4.45c. to 4.50c., according to quality.

Spelter. — There has been practically no change in the situation. The metal is freely offered at 5.45c. for spot and 5.35c. for futures. St. Louis is quoted 5.20c. to 5.40c., according to brand. We have heard, however, of a quotation naming 5.35c., New York, and 5⅛c. to 5.15c., St. Louis. London declined to £22 5s. It is stated in the trade that certain large smelters have sent representatives East and are now offering the metal direct to consumers. It is said that the figure at which they are selling is 5.45c., spot.

Antimony. — Is unchanged. Hallett's and Cookson's are firm at 9¾c. to 11c., respectively.

Nickel.— For lots larger than 1000 pounds 36c. to 40c. is still maintained, while for smaller lots 40c. and upward is asked, according to quantity and delivery.

Tin Plate — Is without change. There is talk of brokers selling more freely than they have in the past. The quotations named by the American Tin Plate Company are 4.82½c. to 4.87½c. per box for 100-pound Cokes, New York delivery.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

	Reporting mines.	Outside sources.	Total U. S. product.	Product foreign mines.	U. S. exports.
First half 1895 ...	70,612	9,100	79,712	42,484	34,215
Second half 1895..	84,885	6,600	91,485	43,674	30,507
Total 1895.....	155,497	15,700	171,197	86,178	64,722
First half 1896....	94,180	7,200	101,380	42,255	58,216
Second half 1896..	95,314	7,200	102,514	43,941	67,287
Total 1896.	199,494	14,400	203,894	86,196	125,503
First half 1897....	103,651	5,000	108,651	44,263	64,870
Second half 1897..	100,555	6,900	107,455	44,007	64,340
Total 1897.....	204,206	11,900	216,106	88,270	129,210
First half 1898....	112,687	7,800	120,487	40,880	68,284
Second half 1898..	103,535	10,250	113,785	43,674	76,831
Total 1898.....	216,222	18,050	234,272	84,554	145,115
First half 1899....	111,987	12,500	124,487	43,629	56,460
July, 1899.....	18,533	2,800	21,333	7,390	7,160
August.....	19,886	2 800	22,686	7,292	10,920
September.....	19,515	3,200	22,715	7,839	7,553

The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, NEW YORK, October 18, 1899.

There is very little change in the situation. A few merchants have reported a falling off in inquiry and general business during the last week, while the larger concerns state that there has been no abatement of activity. It is generally conceded, however, that in smaller tools the manufacturers are keeping abreast with the demand in excellent shape, while larger tools are still becoming scarcer. A consignment of six lathes, ranging up from 24 inches swing, were received on Wednesday of last week by a Liberty street merchant. They were considered a choice morsel by prospective purchasers who were looking about in the street, and on Friday night they were all sold. The writer saw the last one leaving the store yesterday. The situation in planers is constantly becoming tighter. We have heard of no changes of price recently of importance. That values are being maintained is evidenced by the bids opened a week ago at Washington for the Brooklyn Navy Yard equipment. The prices for the standard tools were upheld better than was anticipated, and the wide deviation in prices named for certain tools shows that there were distinctly two grades of tools offered.

We are informed that operations are now under way for new classification and rearrangement of the product of three machine shops controlled by the Niles-Bement-Pond Company. The first step in this direction which has been completed is in connection with the Pond shops. It is stated that hereafter no planers smaller than 72-inch will be built at these shops. Further arrangements of this nature which are in contemplation and under way will result in facilitating production and will prove benecial to both producer and consumer. Doubtless the largest single order for machine tools placed in this market during the last week was awarded by the International Steam Pump Company. The list included numerous standard tools. It is said that the equipment was for the Worthington works in Brooklyn. The International Company are adding to all of their works and are purchasing improved labor saving tools wherever they can be picked up. The main offices of the company are in the Standard Oil Building, 26 Broadway, New York. Mr. Demarest is purchasing agent for the company.

Shipments are now being made of the machinery purchased by the New York Ship Building Company of Camden, N. J. The machinery will be installed in temporary shops. This company have just closed, with Thayer & Co. of 39 and 41 Cortlandt street, for a 2000 horse-power boiler plant. Cahall "B. & W." type boilers will be installed. The Fuel Economizer Company of 74 Cortlandt street, and Manhattan, N. Y., received an order for an economizer plant from the New York Ship Building Company. We understand that the engines have not been ordered as yet.

The Continental Automobile Company, who were incorporated under the laws of the State of New Jersey recently, are a consolidation of the properties and interests of the Manhattan Oil Motor Company of Jersey City, N. J.; the Winton Motor Carriage Company of Cleveland, Ohio, and the National Motor Carriage Company of New York. We understand that the latter company have a plant in operation at Stamford, Conn. We are informed that one of the first movements contemplated by the new company is extensive additions to the existing plants. It will be recalled that the plant of the Manhattan Oil Motor Company is a new one. Large amounts of machine tools have recently been purchased in this market for installation in this plant. The Captaine motor has been the product of this plant. It is said that both the Jersey City and Cleveland plants will be doubled in size. The present capacity of the combined plants is 500 automobiles and 1800 marine and stationary motors a year. The company, it is said, have acquired business in booked orders which will fully employ the present capacity of the plants for 12 months. The main offices of the company are located at 32 Broadway, New York. The com-

pany are capitalized at $8,000,000. Waldron Moore, secretary of the company, is in charge of the New York offices. The directors of the company are Hon. Anthony Higgins, ex-United States Senator, Wilmington, Del.; William H. Bulkeley, director United States Bank, Hartford, Conn.; William H. Lake, capitalist, New York City; W. H. Nixon, Martin & W. H. Nixon Paper Company, Philadelphia; George H. Brown, secretary Winton Motor Carriage Company, Cleveland, Ohio; Charles T. Welles, president City Bank of Hartford, Hartford, Conn.; A. M. Jordan, president Atlantic City Sewerage Company, Atlantic City, N. J.; W. C. Hendrickson, Belle Mead Stock Farms, Belle Mead, N. J.

The McCormack Harvesting Machine Company of Chicago, Ill., who are building new machine shops and foundry, have placed a large contract with the Buffalo Forge Company of 39 and 41 Cortlandt street for foundry equipment. The apparatus ordered is for heating the foundry and consists of two 220-inch fans, each direct connected to a 14 x 14 inch high speed engine. The contract also calls for 40,000 feet of heating surface in Buffalo stacks.

The Buffalo Forge Company also received an order from the Duplan Silk Mills Company of South Bethlehem, Pa., for a heating and ventilating system.

Thayer & Co. of 39 and 41 Cortlandt street were awarded contracts for 3000 horse-power of Cahall boilers from the Baltimore & Ohio Railroad Company. The boilers are to increase the capacity of various of the company's machine shops.

J. G. White & Co. have been awarded the contract for the equipment of a power station for the Detroit & Lake Orion Railway Company. The station will be built at Rochester, N. Y. The engines have been ordered by J. G. White & Co. They will be Ball & Wood 600 horse-power vertical cross compound. The feed water heaters have also been ordered from the Goubert Mfg. Company, 16 Church street, New York. Boilers, pumps, piping, generators and other appurtenances have not as yet been ordered.

We are informed that the Brown Hoisting & Conveying Machine Company have been awarded the contract for three large traveling cranes, to be installed in the new plant which is being erected at Sydney, Cape Breton, by the Dominion Iron & Steel Company. There will doubtless be many large orders for machinery awarded by the Dominion Company within the near future.

John McDonald & Co. of Glasgow have ordered from the Ingersoll-Sargent Drill Company 12 large air compressors.

Shipments have just been made of material for installation in the new power plant being built by the Buenos Ayres Electric Tramways Company at Buenos Ayres. The shipment includes Babcock & Wilcox water tube boilers and General Electric generators. The Riter-Conley Mfg. Company have been awarded a contract for four steel car sheds from the United Railway & Electric Company of Baltimore. The contract is said to be worth $215,000.

Consolidating the Scrap Trade.

An effort is under way to bring about two consolidations in the scrap trade, both being under the management of Wexler, Ward & Lewis of 237 Broadway, New York. It appears that the undertaking to consolidate the interests of the trade in scrap metals, copper, &c., has proceeded furthest, a number of options having been secured and that the building of a refining plant is under consideration. As yet little appears to have been done in regard to old iron material.

The Shanghai Warehouse Association, fathered by the National Association of Manufacturers, it is reported, have completed arrangements for the establishment of an important warehouse and sample rooms at Shanghai, China. A valuable site has been secured and a suitable building for the display and storage of American goods is to be erected thereon. L. V. Boeck, who has been engaged in mercantile pursuits in China for a number of years, has been engaged as manager of the warehouse. The Chinese Government is said to view the scheme with favor and to have offered many courtesies and advantages.

The Standard Oil Company have secured control, through the National Salt Company, of the total salt output of the United States.

At the expiration of the lease of the Jefferson Furnace in the Wheeling district to Naylor & Co., the National Steel Company will operate the plant.

PERSONAL.

Frank M. Pierce, president of the Frank M. Pierce Engineering Company, is expected back from Europe this week after an absence of several months abroad.

An inventory was filed in the Philadelphia Probate Court a few days ago of the estate of the late Percival Roberts, of the A. & P. Roberts Company. The appraisers place the value of the estate at $1,558,857, over $1,000,000 of which represents the holdings of Mr. Roberts in the Pencoyd Iron Works. The real estate of the testator, which is worth a considerable amount, is not included in the inventory.

John Stevenson, Jr., of New Castle, Pa., is now in British Columbia. After being joined there by his wife they will go south to California. Mr. Stevenson's health is a good deal better, but his business intentions have not as yet been defined.

A. L. Harris, vice-president of the Fourth District of the Tin Plate Workers' International Protective Association, has resigned, and Baker Boyd, of Martin's Ferry, Ohio, has been appointed to succeed him.

George H. Fisher has been made manager of the Eagle Works of the Republic Iron & Steel Company, at Ironton, Ohio.

George F. Evans has resigned as manager of the Westinghouse Mfg. Company, Limited, of Canada.

Joseph Porter has been appointed manager of the Palmer Iron & Steel Company's mill at Muncie, Ind.

Col. Isaac L. Ellwood, second vice-president of the American Steel & Wire Company, is mentioned for the United States Senatorship from Illinois.

J. F. Townsend, formerly general freight agent of the Wheeling & Lake Erie Railroad, stationed at Toledo, Ohio, has been appointed traffic manager for the National Tube Company, with headquarters in Pittsburgh. We understand there were more than fifty applicants for this position.

E. J. Bird is superintendent of the Jennie Furnace at Big Stone Gap, Va. The furnace is to be blown in in November.

A. C. Rice, who for the past 15 years has been the general superintendent and chief engineer of the Stillwell-Bierce & Smith-Vaile Company, at Dayton, Ohio., has moved his office to the State Mutual Building, at Worcester, Mass., where he will devote his time to consulting, hydraulic and mechanical engineering.

H. F. J. Porter of the Bethlehem Steel Company, delivered a lecture, illustrated by stereopticon views, on "The Position of Forging in the Arts" before the Political Economy Club of the University of Chicago, on the 19th inst.

Willard S. Mattox has severed his connection with Henry R. Merton & Co. of London. He has returned to this country.

A. G. Smith, formerly master mechanic of the Geneva Tool Company, Geneva, Ohio, has become superintendent of the Automobile Carriage Supply Company of Cleveland, Ohio.

John Horner, formerly connected with the New Castle Steel & Tin Plate Company, New Castle, Pa., has been appointed manager of the new Tin Plate plant of the National Enameling & Stamping Company, at Granite City, Ill.

The Pottstown Bridge Company, Pottstown, Pa., have shipped for the New York Shipbuilding Company plant at Camden, N. J., one of the largest pieces of girder work ever turned out. It is of the lattice type, 92 feet long and 10 feet high, weighing 25 tons. Three long cars were required to transport it. Three more of these girders will be built, the heaviest to weigh 40 tons.

The Baldwin Locomotive Works, Philadelphia, have received an order for 20 Mogul locomotives for the Grand Central Railway Company of England, similar to those furnished to the English Midland and Great Northern railways.

Superintendent Wennas and the seven skilled structural iron workers from the Pencoyd Iron Works who went to Egypt to erect the Atbara Bridge in the Soudan, upon their return home were the recipients of a gold watch each from Percival Roberts, Jr.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING OCTOBER 18, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
$20,000,000	Am. Car & Foundry, Common..	2,635	.....	-16	15 -15¼	15 -15¼	15¼-16¼	-15⅞
29,000,000	Am. Car & F'y, Pref.(7% Non-Cu.)	3,725	-61¾	-61	60¼-60⅞	60 -60⅞	60¼-61¾	61 -61½
19,000,000	Am. Steel Hoop, Common.....	5,100	42¾-43	42⅝-43	-42¼	42⅜-43	42 -43¼	42¼-43¼
14,000,000	Am. Steel Hoop, Pref. (7 % Cu.).	1,425	-84½	-84	-83⅞	84 -84¼	-84¼	84¾-85
50,000,000	Am. S. & W., Common.....	41,063	52¼-53¼	51¼-52⅝	51¼-52¼	51⅝-52¾	50 -52¾	50¼-52
40,000,000	Am. S. & W., Pref. (7 % Cu.)....	5,550	95 -96	94⅝-95½	-95	-96	94½-96½	-96
28,000,000	Am. Tin Plate, Common, N. Y..	3,512	37⅞-38	37⅛-37¾	-37¾	37 -37¾	36¾-37½	37 -37½
18,000,000	Am.Tin Plate, Pref.,N.Y.(7% Cu.)	752	85¼-85½	.....	.....	-85¼	-85½	.....
28,000,000	Am. Tin Plate, Com., Chic.....	1,060	37½-37½	37 -37⅜	.....	....	-37¼	.....
18,000,000	Am.Tin Plate,Pref.,Chic.(7% Cu.)	200	.....	... .	.....	.....	85 -85½	.....
7,500,000	Bethlehem Iron†	100	.....	.....	.....	.....	.....	-61
15,000,000	Beth. Steel, Par $50, $1 paid in.	724	-21	20 -20¼	-21	-20¼	.....	20 -20¼
7,974,550	Cambria Iron, Phila*.....	107	.....	.....	-44½	.....	.....	.....
16,000,000	Cambria, Steel**.....	3,317	23¼-23⅝	-23¼	23¼-23⅜	23¼-23⅛	23¼-23⅝	-23⅝
11,000,000	Col. Fuel and Iron.....	9,666	54½-55½	53 -54½	53 -53⅝	52½-54¼	53⅝-55¼	54¼-54⅝
46,484,300	Federal Steel, Common.....	47,205	53⅞-54¾	53⅝-54⅝	53 -53¾	53¼-54¼	52½-54¾	53 -54¼
53,253,500	Federal Steel, Pref. (6% Non-Cu.)	5,285	78 -78⅛	76⅝-78	76 -77⅛	-77¼	77 -77¾	76¾-78
32,000,000	National Steel, Common, Chic..	1,600	.....	50⅛-50¾	50 -50⅛	50 -50¼	50 -50¾	50 -50¼
27,000,000	National Steel, Pref., Chic.(7% Cu)	101	95 -95½	.....	.....	.....	.....	.....
32,000,000	National Steel, Common, N. Y..	6,430	50¼-51¼	50 -50⅜	50 -50¼	50¼-50⅛	49⅝-51	50 -50¼
27,000,000	Nat'l Steel, Pref., N. Y., (7% Cu.)	1,653	95½-96	-95½	-95	94½-95	94⅞-95	.....
5,000,000	Penna., Common, Phila.....	.....	.....	.....	. .....	.....	.....	.....
1,500,000	Penna., Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Common.....	1,370	-58	57½-57⅝	.....	-58	56½-56¾	-57
12,500,000	Pressed Steel, Pref. (7 % Non-Cu.)	1,290	-88¼	-89	-89	-89	-89½	89 -89⅞
27,352,000	Republic Iron & Steel, Common.	6,329	27½-27¾	27 -27¼	26¼-27	26¼-27	26 -26¾	-26¼
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	3,250	72 -72¼	71¾-72¼	71 -71¼	70 -71	70⅛-71¼	70¼-71
20,000,000	Tennessee Coal and Iron.....	10,180	113 -116⅛	113¼-114⅛	114 -115	114¼-116⅛	115 -116¾	116 -116¾
1,500,000	Warwick Iron & Steel, (par $10)	2,040	-11⅞	11⅞-12	-12	11⅞-12	-11⅞	-11⅞

* Par $50. ** $1.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia and Chicago sales by telegraph.

Bonded Indebtedness: Am. S. & W., $130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., $2,000,000 6 % debenture 20-year bonds, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., $13,200,000 Illinois 5 %, $7,417,000 E. J. E. R. R. 5 %, $1,600,000 Johnson 6 %, $6,732,000 D. & I. R. R. R. 5 %, $1,000,000 2d D. & I. R. R. R. 6 %, $10,000 land grant D. & I. R. R. R. 5 %; National Steel, $2,561,000 6 %; Tennessee C., I. & R. R. Co., $8,367,000 6 %, $1,114,000 7 %, $1,000,000 7 % cu. pref.; Pennsylvania Steel, $1,000,000 Steelton 1st; $2,000,000 Sparrow's Point 1st, $4,000,000 consolidated, both plants; Bethlehem Iron, $1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen Mort 6 % $880,000; Col. Coal & Iron Con. Mort. 6 % $2,810,000; Col. Fuel & Iron Gen. Mort. 5 % $2,303,000. Also outstanding $2,000,000 preferred stock with accumulated dividends of $640,000 to June 30, 1899

Iron and Industrial Stocks.

The financial situation has not been such as to encourage any active speculation in industrial stocks, and the movement has been light, on the whole, with few fluctuations of magnitude. American Steel & Wire common has receded during the week under review, while Tennessee has advanced pretty steadily.

A number of new consolidations which are on the tapis are being held back by the difficulties incident to financing at the present time. Among these the most conspicuous are the American Bridge Company. The sheet consolidation has met with obstacles and it seems doubtful whether it has much chance of being put through in the near future. It is possible that the options may be extended to March 1, 1900.

	Bid.	Asked.
International Silver, Common	11	12
Otis Elevator, Common	30	33
Otis Elevator, Preferred	93	95
H. R. Worthington, Preferred	108	110
Cramp's Shipyard Stock	65	75
Pratt & Whitney, Common	3½	5
Pratt & Whitney, Preferred	50	54
E. W. Bliss, Common	132	...
E. W. Bliss, Preferred	125	...
U. S. Projectile	95	100
Barney & Smith Car, Common	21	25
Barney & Smith Car, Preferred	79	83
International Pump, Common	22½	24
International Pump, Preferred	71	73
New Haven S. & I.	6½	6⅞
Susquehanna I. & S.	5⅞	6
Diamond State Steel	7¼	7⅝
Tidewater Steel	15¼	15⅞
Sloss & Sheffield Steel & Iron, Common	39	41
Sloss & Sheffield Steel & Iron, Preferred	77	78½
National Tube, Subscriptions, Common	46	46¾
National Tube, Subscriptions, Preferred	98	98½

The International Steam Pump Company have declared a quarterly dividend of 1½ per cent. on their preferred stock, payable November 1. Books close October 21 and reopen November 2.

On Saturday, October 14, articles were filed with the Secretary of the State of New Jersey amending the charter of the Pittsburgh Coal Company, who were incorporated under the laws of that State some time ago. By the amended charter the authorized capital stock of the company is increased from $2000 to $64,000,000. One-half of the stock authorized by the charter filed is preferred with 7 per cent. cumulative dividend. The papers filed were signed by W. W. Ford, president, and W. H. Brearley, secretary. The company are organized for the purpose of operating coal mines in Western Pennsylvania.

A special meeting of the stockholders of the Westinghouse Machine Company of Pittsburgh has been called for December 12, to vote on a proposition to increase the indebtedness of the company. This increase on the indebtedness will be used to erect a foundry and forge referred to in *The Iron Age* of last week.

The American Steel Casting Company of Chester, Pa., have declared a semi-annual dividend of 3 per cent. on the common stock.

The directors of the Warwick Iron & Steel Company have declared a quarterly dividend of 2 per cent. and an extra dividend of ½ of 1 per cent. The dividend is payable November 10, to stock of record October 31. Stockholders of that date will also be allowed to subscribe to $500,000 new stock in the proportion of one of the new for two of their present holdings. It is understood that the net earnings of the Warwick Iron & Steel Company for the second quarter were $61,000, and the dividend for the period, including the extra, requires but $25,000. It is also understood that the new stock will be payable in five payments extending over a year. The money is to be used only for an additional furnace, and will not be needed except as the work progresses.

The quarterly dividend of 1½ per cent. on the stock of the Bethlehem Iron Company, guaranteed by the Bethlehem Steel Company, has been declared, payable November 1 to stock of record October 15.

The American Steel Hoop Company have now practically completed all their low priced orders for finished products, taken over with the plants, and are witnessing a rapid increase in the net average prices received. On the old prices, using partly high priced billets, bought to secure immediate delivery, the company have made a profit of $1,019,000 from April 17 to October 1. With an output of 70,000 tons of pig iron and finished material per month very handsome returns are in sight. The American Steel Hoop Company have sold for delivery during the next six months a total of 150,000 tons of pig iron, with ore and fuel contracted for at low prices. On finished goods the average price has risen from $31 in August to $35 in September, and is thus far in October averaging $40 per ton.

The rehabilitated Dismal Swamp Canal was reopened to traffic on Saturday, a special inspection fleet going from Norfolk, Va., to Elizabeth City. The new inland waterway will enable shipping of light draft to avoid the Diamond Shoals.

Markt & Co. Enter the Export Machinery Trade.

The well-known firm of Markt & Co. of New York, London, Hamburg and Paris, who for more than a quarter of a century have been large exporters of general hardware, hardware specialties, bicycles, bicycle sundries and small tools, decided some two years since to enter the export ranks with a full line of machine tools. This department was placed in charge of J. J. Mullaney, who has gathered about him an efficient corps of practical mechanics, men who can not only talk about but operate the machines they are selling. Mr. Mullaney has returned after a seven months' trip through England, Germany, France and Denmark, and reports that business is in a very prosperous condition.

The aggressiveness which has characterized the career of Markt & Co. in the hardware line, is again being shown in the management of their machinery department, and this has been demonstrated in their taking to Europe a machine for making wire nails. The wire nail industry has long been considered essentially European, and it certainly appeared like carrying coals to Newcastle to endeavor to introduce an American wire nail machine in Europe. This style of nail is supposed to have originated in France, from which country it was adopted by Belgian mechanics, who in turn failed to take full advantage of the business, and it is now, so far as Europe is concerned, practically in the hands of the Germans; yet while the Germans have appreciated the value of the wire nail industry, it has remained for the Americans to fully develop the wire nail making machine, and bring it to its present perfection.

The fact that the European nail makers felt confident they had the best machine for making wire nails made it a very difficult task to successfully introduce an American machine.

Realizing this, the company decided to show the Bates nail making machine in operation, and in furtherance of this plan machines were sent to Paris, where they were erected and run continuously for three months. This nail making exhibition was open to the inspection of those interested in the subject. In addition to leading to the sale of a quantity of these machines, it has caused the free admission by expert French engineers and the French mechanical papers that the quality of nails made on the American machines is considerably better than those made on the European machines, while the production is far in excess of any European machine.

This consumed a great deal of time and necessitated considerable outlay, but it was the only way to do the business thoroughly and effectively, and although considerable time and energy have been devoted to this subject, it is only one instance of what has been successfully accomplished, because Markt & Co. have secured exclusive sale, in most cases for the whole of Europe, of the products of the following manufacturers, whose goods are all well known and appreciated in this country:

American Turret Lathe Works Company of Wilmington, Del., who will shortly introduce the Conradson automatic and semi-automatic turret lathes.

Grant Machine Tool Works of Cleveland, Ohio, builders of a general line of machine tools.

The Pearson Machine Company of Chicago, Ill., manufacturers of screw and turret machinery.

Lodge & Shipley Machine Tool Company of Cincinnati, Ohio., who manufacture lathes exclusively.

Fitchburg Machine Works of Fitchburg, Mass., builders of a general line of machine tools.

The Bradford Mill Company of Cincinnati, Ohio., who manufacture lathes exclusively.

The Oesterlein Machine Company of Cincinnati, Ohio, builders of milling machines only.

Meitz & Weiss of New York, gas and kerosene engines.

Bates Machine Company of Joliet, Ill., manufacturers of nail machines and wire working machinery.

Within the next three months the company will open in Europe, in addition to their regularly established offices, three showrooms, devoted exclusively to the exhibition and sale of machine tools, and they have, within the last thirty days, placed orders for machinery, aggregating $60,000, for these machine showrooms. They will also represent at the Paris Exposition the above mentioned manufacturers, who have been allotted over 1100 square feet of floor space.

Theodore A. Shaffer, president of the Amalgamated Association of Iron and Steel Workers, at Pittsburgh, has issued the following official statement: "As the national lodge has been in receipt of many letters and personal calls for information as to whether Amalgamated Association men can work in unorganized mills, I wish to say that the convention of this year decided that there should be no open mills, and that all mills as they relate to Amalgamated Association men are union and non-union only. Many inquiries having come to the national officers and to me, personally, I wish to say that on tin mills the 5 per cent. is allowed on 20½ x 56 and all orders which will average the same—that is, 1148 square inches. This is the only allowance on the limit, none being placed on wide mills, as formerly, and no special privilege has been, or will be, given to any."

Rolling Large Seamless Pipe.—A highly interesting product, from the standpoint of its promise for the future, is now at the works of the well-known firm of machinery builders, the Philadelphia Roll & Machine Company. It is a piece of seamless steel pipe in the rough, as it came from the rolls, its inside diameter being 20 inches, while the thickness of the walls is ⅝ inch. Its length is 72 inches, that being the maximum, due to the size of the heating furnace. It was rolled at South Bethlehem, at the experimental plant built there some time since to produce from hollow ingots, direct, steel pipe of large diameters. The mill was built under the patents of S. P. M. Tasker, now controlled by W. F. Bartlett, 1818 North Eighteenth street, Philadelphia. Mr. Bartlett modified the original design and a few weeks since succeeded in rolling the pipe referred to. At the present time some improvements are being added to the mill, and then, it is expected, a further and final trial will be made. The test made shows that pipe of large diameter can be rolled from the hollow ingot and it is believed that the method will develop a large and profitable industry.

The Joliet Warehouse & Transfer Company have been organized, with a capital of $50,000, at Joliet, Ill., to conduct a general storing, transferring and forwarding business. They have a large building fully equipped for the purpose, located directly on the Elgin, Joliet & Eastern Railroad, or outer belt line, which crosses or connects with every railroad entering Chicago. Thus every advantage of a Chicago location is secured, besides the saving of much time in the transfer of freight from the East to the West, or *vice versa*, by reason of not entering the crowded city. It is claimed that from 12 to 36 hours can thus be saved. They can handle anything in the iron line or general merchandise. E. E. Wolcott, formerly secretary of the Bates Machine Company, is secretary and general manager. The other officers and directors of the company are Joliet business men.

At Pittsburgh last week a settlement was effected in the United States Circuit Court in the case of the National Tube Works Company against the Pennsylvania Tube Works, and the following order was made: "By consent of the defendant it is ordered and adjudged that letters patent 581,251, issued to the complainant for improvement in the manufacture of tubing, are a good and valid patent; that the complainant is entitled to exclusive right of such invention, and that an injunction be allowed restraining the defendant from any further infringement." Nominal damages in the sum of $1 were allowed. Both of the above concerns have been taken over by the National Tube Company.

The traffic managers of the Central Freight Association have decided to advance freights on iron 20 cents per ton, to take effect January 1. The new rates will be on the basis of $3 for billets and $2.75 for pig iron between Pittsburgh and Chicago.

The J. D. Smith Foundry Supply Company, Cincinnati, Ohio, issue a price-list of the castings adopted by the Milwaukee Foundrymen's Association. Supplementing this standard list is the J. D. Smith Foundry Supply Company's list of Foundry Facings and Blackings; also Foundry Supplies, Sundries, Clay and Molding Sand, &c.

The Monongahela River Consolidated Coal & Coke Company of Pittsburgh have bought about 3800 acres of coal land in the fourth pool for $1,000,000 cash. The track belonged to the New York & Cleveland Gas Coal Company, and the vein is said to be 7 feet thick.

One of the interesting developments of this busy period is the demand for technical engineers, graduates of technical schools being sought by managers of manufacturing establishments.

The German naval budget, just completed, calls for 65,500,000 marks for vessels in process of construction. The list shows that 37 vessels for the German Navy are now being built, of which eight are battle ships and eight are cruisers, the rest being torpedo boats.

The Struggle for Lake Shipping.

BY WALDON FAWCETT.

Some time ago, according to the best authority, John D. Rockefeller offered to transfer his entire holdings of iron ore mines, ore carrying railroad lines and vessels on the great lakes to the Carnegie Steel Company for a consideration of $50,000,000. The Pittsburgh interest declined the proposition. Growing out of this refusal arose new conditions, inducing in turn the pursuit of a new policy, which has just culminated in the establishment of a "corner" on the lake freight market for the season of 1900 by the Rockefeller interest, or the Bessemer Steamship Company, as they are officially termed.

In effect this has been accomplished by the purchase by Rockefeller of 30 boats—comprising what is known as the "whaleback" fleet by reason of the character of their construction—and the charter for the entire season of 1900 of about a dozen other steel vessels of the largest class. These acquisitions, together with the regular Rockefeller fleet of two dozen boats and the three new vessels building to his order, which will come out next spring, give into the control of the Bessemer Company a fleet of very close to 70 vessels, comprising almost all the largest and most modern vessels on the great lakes.

To fully appreciate the prestige which the control of such a fleet confers it is necessary to glance for a moment at existing conditions. The lake fleet is limited in size; the shipyards can turn out no new vessels save those already contracted for; almost all the tonnage not in the hands of the Bessemer Company is controlled by the American Steel & Wire Company, the Federal Steel Company, the National Steel Company, or some other large producing interest; finally, with all manufacturing plants pushed to their fullest capacity and new furnaces coming into blast, there will be a demand next year for pretty close to 20,000,000 tons of iron ore, or upward of 3,000,000 tons in excess of what has been available during any previous season, not excepting the present.

With these circumstances well in mind it is easy to appreciate how the management of the Rockefeller fleet has gained dictation of the lake freight market, or at least all of it save the portion of ore provided for by the vessels owned by producing corporations. Included in the ore which must be governed by the transportation charges of the open market is practically three-fourths of the 4,000,000 tons which the Carnegie Company will require next season and all of the material needed by the independent consumers outside the Federal, National and American Steel & Wire corporations. Even in the case of these latter there is a strong probability that outside vessels will be needed to assist their own craft in bringing down the lakes the ore which they will consume.

The "corner" was desired simply as a means to an end—the privilege of fixing freight rates on the lakes and incidentally, of course, the selling price of ore for the season of 1900. This the Rockefeller interest has secured beyond all question. For the beginning of the circumstances which finally led up to this present day ambition of the oil king we must go back several years.

Rockefeller's original holdings consisted of mines in the Lake Superior district and a railroad which carried the ore from the mines to shipping ports on Lake Superior. One year lake freights shot up to $2.75 and the magnate saw at once that to protect himself he must secure control of a fleet of lake vessels. Accordingly contracts were let for upward of a dozen boats as a start off, and additions to the fleet have been made steadily down to the present day, the fleet now consisting as heretofore stated, of 24 completed steamers and barges.

When Rockefeller some years ago leased a considerable portion of his mine property to the Carnegie interests it was with the agreement that all ore taken therefrom should be carried over his railroad and transported down the lakes on his ships. The tariff for this water transportation, it was agreed, should be fixed at the average paid in the open market during each season. Thus it will be seen that a final settlement of freight carrying charges is impossible until the close of each season, although payments on account are made from time to time.

It will thus readily be seen that low freights are to the interest of the Carnegie Company, while high charges are proportionately favorable to the Rockefeller interest. Not only is this true in the particular transaction in which both are participants, but in the outside operations of each as well, because the Carnegie Company have say 2,500,000 tons of ore to move annually, aside from that for which the Rockefeller boats provide transportation, while Rockefeller's mines not under lease to the Carnegie Company produce annually perhaps 1,500,000 tons.

In the case of the season of 1899 the Carnegie interest have had decidedly the best of the situation. They were in the market early and chartered a few boats on season contracts at 60 cents, with the result that the vesselmen stampeded and within a few days from the time the market opened the entire season's output of contract ore was covered at that figure. In some seasons 60 cents would be a fairly profitable rate, but with sailors' wages, unloading and fuel expenses increased, the profits were cut down considerably. Particularly was it an exasperating situation when along in September of the present year the "wild" rate went up to $2 per ton.

The Bessemer Company did not intend to be caught napping a second time and thus some time ago they opened negotiations for the purchase of the fleet of the American Steel Barge Company, consisting of about 30 vessels, valued at $3,000,000. Before the negotiations were concluded a story was sent out to the effect that the Carnegie Company had purchased the fleet. Just how it originated is something of a mystery, for the Carnegie people had not even been figuring for the boats, but at the same time the Rockefeller interest saw that its effect must be counteracted at once, or else independent vesselmen seeing an immense amount of tonnage already in the hands of the Carnegie interest, might be induced to accept the $1 or less rate for season contracts, which was what the Pittsburgh corporation desired. Accordingly the Bessemer Company a few days following the circulation of the first report announced that they had secured the whaleback fleet.

With this the fight between the giants of the industrial world commenced in earnest. The next move came with the announcement, on the day following that of the Rockefeller purchase, that the Carnegie Company had closed a contract with the American Ship Building Company, the trust of lake yards, for the construction of two barges. This week they are to decide whether to order two more barges or to make them steamers. Altogether they have secured options on 10 boats.

As the lake yards are encountering the greatest difficulty in securing material for the prosecution of contracts already on hand it would have been impracticable for the shipbuilding company to have undertaken the Carnegie contract but for the promise of the Pittsburgh interest to insure the provision of the material for the boats. The new Carnegie steamers will each be 475 feet in length over all, 50 feet beam and 29 feet depth, and will have a capacity of 7200 gross tons of ore.

Meanwhile the Carnegie Company were seeking other tonnage and naturally looked first toward the boats controlled by John Mitchell of Cleveland. This fleet is probably the largest independent one on the lakes and it includes the steamers "John J. McWilliams," "M. A. Hanna," "H. S. Holden" and other craft constructed within the past few years, and of the largest and most modern lake type. For the four largest of these vessels the Carnegie representative made an offer of $350,000 each, which was, of course, a good margin over first cost.

This scheme was, however, checkmated by a Rockefeller move. The Bessemer Company made a proposition to Mr. Mitchell to charter not simply the four large boats, but his entire fleet of eight boats for the season of 1900 to carry ore from the head of Lake Superior at a rate of $1.25 per ton. The offer was accepted. Following up his advantage, L. M. Bowers, Rockefeller's representative on the lakes, chartered the steamer "Senator," a new boat building at the works of the Detroit Dry Dock Company, and other vessels at the same rate. In fact he continued to tie up the vessels under charter until he was practically assured of the control of the lake market.

John D. Rockefeller, in discussing the affairs of the Standard Oil Company with a friend a short time ago, declared his determination that there should be no speculation in Standard stock. Partisans of the Bessemer Company point to this and other similar utterances as evidence that there is no element of speculation in the present Rockefeller policy on the lakes, and that the Bessemer Company have covered very little tonnage beyond what will be required for the transportation of their own ore. Many shrewd observers in the iron world, however, find this difficult of belief. The Rockefeller fleet next season will carry, on the most conservative estimate, from 4,500,000 to 5,000,000 tons of ore. The Bessemer Company's own fleet, with the three new boats to be ready in the spring, will take care of at least 2,000,000 tons; the whaleback fleet will carry 1,500,000 tons, and the Mitchell steamers and other chartered boats afford provision for from 1,000,000 to 1,500,000 tons.

Against this there is not much more than 3,500,000 tons of ore in sight on which Rockefeller has first call. The Carnegie ore which it is obligatory shall go forward in Rockefeller ships, has not heretofore amounted to more than 1,500,000 tons, but granting that under the unusual conditions next year it is increased to 2,000,000 tons, the aggregate, with the 1,500,000 tons of independent Rockefeller ore, which is sold through Oglebay, Norton & Co. of Cleveland, does not foot up more than 3,500,-

000 tons. It is claimed, however, that the mines directly under the control of the Rockefeller interests can be made to yield an immensely increased output and that the amount of ore which the Rockefeller interest has to dispose of in the open market will far exceed the 1,500,000 tons estimated.

Whether or not the element of speculation is present in the workings of the Rockefeller project is, however, of comparatively little consequence, for it is apparent that the Carnegie Company and other interests as well will be compelled to come to the Bessemer Company for vessels. The Carnegie Company control in the aggregate an output of 4,000,000 tons of ore annually. Allowing for the transportation of half of this under the existing long time contract with Rockefeller and for the moving of 1,000,000 tons by the new boats to be built for the Carnegie Company and the few small boats which they secured by purchase from the Lake Superior Iron Company, it will be seen that there is still 1,000,000 tons to be placed in the open market. Aside from this there are a few small independent consumers whose requirements will have to be cared for.

For all that as yet seemingly little attention has been paid to it there lies back of all the present movements and counter movements the certainty that the labor situation in every department of industry concerned in the mining and movement of iron ore will prove a far bigger problem next season than many people anticipate. The establishment of a $1.25 freight rate means, of course, that iron ore will sell next season at an advance of fully $2 per ton. It is unreasonable to suppose in the light of this season's experiences that the men who mine the ore, the men who transport it down the lakes, and the men who transfer it from cars to boats and boats to cars will not, one and all, demand increased wages. During the present season the problem has been most perplexing at the unloading docks on Lake Erie and dock interests have been subjected to all sorts of tyranny with no certainty that a solution will be found by next season despite the numerous "black lists" now in preparation. Next season, however, the problem will come forth with the most emphasis in the mining district.

Everything points to a concentration of effort to get out as near 20,000,000 tons of ore as possible. This season the scarcity of labor more than any other one thing has made it a difficult task to reach the 16,000,000-ton figure for the season's output. That these facts mean nothing less than a necessity for heavy wage advances ought to be appreciated. It should be remembered, also, in forecasting the situation, that the Rockefeller interest is one of those desirous of getting out every ton of ore possible. It has always been the policy of the Standard Oil magnate, on the lakes, as elsewhere, to accomplish his ends by paying his employees more than any competitor could or was willing to do. If he employs these tactics in the mining district next season, as he probably will, a new and menacing situation may confront the large producing interests which control their own mines.

The Naval Architects.—The seventh general meeting of the Society of Naval Architects and Marine Engineers is to begin on November 16. The following papers will be read: 1. "Coaling Vessels at Sea," by Spencer Miller. 2. "Causes for the Adoption of Water Tube Boilers in the U. S. Navy," by Engineer-in-Chief George W. Melville. 3. "Suggestions as to Improved Appliances for Launching Ships' Boats," by John Hyslop. 4. "The Electric Plants of the Battle Ships Kearsarge and Kentucky," by Naval Constructor J. J. Woodward. 5. "The Increasing Complications in Warships, and How Simpler Arrangements Might Be Adopted," by George W. Dickie. 6. "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with Some Results," by H. F. Norton. 7. "Notes on Sheathing the U. S. S. Chesapeake," by Naval Constructor Lloyd Bankson. 8. "System of Work in a Great Lake Shipyard," by W. I. Babcock. 9. "Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard," by James Dickie. 10. "Designs for the Denver Class Sheathed Protected Cruisers," by Chief Constructor Philip Hichborn. 11. "Novelties in Ship Fittings," by Assistant Naval Constructor R. M. Watt. 12. "Progressive Speed Trials of the U. S. S. Manning," by Prof. C. H. Peabody. 13. "Tactical Considerations Involved in Torpedo Boat Design," by Lieut. A. P. Niblack. 14. "On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is Being Put Over," by Prof. William F. Durand.

The *Iron and Coal Trades Review* of London prints the first statement of statistics showing the condition of the blast furnaces in Great Britain on October 1, together with a report of the make during the third quarter. It appears from these figures that there were in blast on October 1 405 blast furnaces, whose weekly output is estimated at 183,870 tons. The production for the third quarter of the year is given at 2,390,310 gross tons.

Iron and Steel Consolidations.

Testimony Before the Federal Industrial Commission.

WASHINGTON, D. C., October 17, 1899.—The Federal Industrial Commission on Monday of this week began the taking of testimony relating to the business methods of the iron and steel industry, with special reference to the manner in which the chief combinations of capital or so-called trusts are conducted. A number of witnesses were summoned by the commission, the first to be examined being William T. Graham of Chicago, second vice-president of the American Tin Plate Company. The examination was conducted chiefly by Professor Jenks of Cornell University, the expert in economics employed by the commission, whose questions were formulated with the evident purpose of showing a close relation between the American Tin Plate Company and the National Steel Company, and also with the view to developing a wide disparity between the present capitalization of the tin plate company and the cost to that company of the various plants which were absorbed by them.

The American Tin Plate Company.

In beginning his testimony Mr. Graham stated that he was also a director in the American Steel Company and the National Steel Company, though he was an officer of the American Tin Plate Company only. He first entered the tin plate industry in 1895. In reply to a question by Professor Jenks as to the character of the product of the American Tin Plate Company and the basis of their market quotations Mr. Graham said that the principal output was in the form of steel plate coated with tin or with tin and lead, and that the unit of price was a box 14 x 20 inches, containing 112 sheets. The price in all cases was based on goods delivered to the purchaser. The chief materials were steel and pig tin, though acids and other less important constituents also entered into manufacture. The steel employed was purchased in billets, slabs or bars. There were a number of concerns in the industry who did not roll their own plates, simply dipping them. The witness would not undertake to say how many such firms there were.

"Are there as many dipping establishments at the present time as when the American Tin Plate Company were organized?" asked Professor Jenks.

"I think so," replied the witness, "they have varied one or two, but I think there is no important difference."

Replying to a question as to the cost of a tin plate mill at the present time as compared with a year ago when the American Tin Plate Company were organized the witness said that he could only make a vague statement, as he had no data at hand, but he thought that the cost of certain important material must have increased 100 per cent. or more. The American Tin Plate Company, the witness said in reply to a question, had not refused to sell black plates to the dipping companies. When asked as to the reasons which impelled the manufacturers of tin plate to form a combination the witness said that the general trend of business for a year or more before the combination was effected was such as to convince them that organization was necessary. The movement which culminated in the formation of the tin plate company began more than 12 months before its consummation. Their authorized capital was fixed at $50,000,000, of which $46,000,000 had been issued, $18,000,000 of preferred stock and $28,000,000 of common stock. The preferred was a 7 per cent. cumulative stock. Both the common and preferred stockholders were entitled to vote.

Professor Jenks questioned the witness minutely as to the method that was pursued by the American Tin Plate Company in the purchase of plants, seeking to ascertain exactly how the value of each plant acquired was arrived at. In reply the witness said that the mills were bought by the company at a cash price, which carried with it an option to buy a certain amount of stock. Each concern selling their plant to the company received $100 worth of preferred and $100 worth of common stock for each $100 worth of cash consideration transferred. He could not say who perfected this arrangement. As to fixing the value of the various plants he said that his understanding was that each firm owning a mill were dealt with by the American Tin Plate Company as an individual. The sellers and the buyers both tried to make as good a bargain as possible, and he believed that one operator knew nothing as to what another operator secured for his plant. He was not sure that each mill was sold for stock. In the case of his own mill, which he disposed of to the company, he put a price on his plant and the good will of his business, and then subscribed for the stock of the company just as any outsider might have done.

Replying to questions the witness stated that the American Tin Plate Company were organized in the State of New Jersey. As to where the stock transfer books of the company were kept the witness did not know. His

position was that of the general manager of the selling department, and being associated only with the commercial end of the business he "didn't worry about other details." Replying to a question he said the company sold their product to the wholesale trade, to the jobbers and to the very large consumers, but not to retailers or to small consumers. They had never refused to sell goods to any jobber.

Jobbers' Brands.

Here Professor Jenks questioned the witness at some length as to the use of brands, by the company, and the witness stated that large quantities of goods were made up under different brands, which in many cases belonged to various jobbers. The goods made under any particular brand were sold exclusively to the jobber owning that brand. Professor Jenks asked if the company had ever sought to compel jobbers to buy from them all the plate handled by them, to which Mr. Graham replied emphatically in the negative. Professor Jenks then produced a document drawn in the form of a contract, upon which he based a series of inquiries, asking if the company had ever undertaken to force their customers to purchase from them their entire supplies and imposing various other restrictions. In reply the witness said that he believed that no such contract as that referred to by Professor Jenks had ever actually been signed, though it was possible that something of the sort might have been contemplated at one time. The contracts now in force contained an agreement on the part of the company to sell their customers branded plates at a price no higher than that charged for the same quality of standard plate and also not to sell the same brand to other customers. The witness was then asked if the jobbers secured higher prices for the plate sold under brands than for standard plate, to which he replied that in some cases a higher price could be secured because of the prestige which a particular brand might acquire within a limited territory. In such cases, however, the extra profit went to the jobber and not to the American Tin Plate Company.

Replying to a question by Professor Jenks as to whether there were any dipping concerns outside of the American Tin Plate Company the witness said there were a number and mentioned Norton Brothers & Co., N. & G. Taylor, John Hamilton, Follansbee Brothers & Co., and the American Sheet, Galvanizing & Tin Plate Company.

Machinery Contracts.

"Did you ever contract with manufacturers of tin plate machinery not to furnish such machinery to parties outside of the American Tin Plate Company?" asked Professor Jenks.

"That question relates to matters entirely outside my department," replied the witness, "but I will say that I believe we have made contracts to take the entire output of certain manufacturers of tin plate machinery. We have made these contracts in order to secure the advantage of all inventions and improvements of the experts and engineers of the concerns making this machinery."

"Does not such a contract prevent others from securing such machinery and does it not therefore shut out manufacturers who are not in your company?" asked Professor Jenks.

"It gives us the entire output of these concerns, as I said before," replied the witness.

Prices.

As to the general trend of prices of tin plate the witness said that the first price at which he made sales was $2.75 per box and the last quotation he remembered was $4.65. As to whether the finished product had advanced more than the raw material he said he did not think so, for the increased cost of steel, pig tin, labor and the operation of the plants had been very great, and in his opinion quite equal to the advance in the market price of plate. Replying to Commissioner Livingston he stated that wages had been increased throughout all departments, the advances ranging from a minimum of 15 per cent. to a maximum of 50 per cent. The members of the Amalgamated Association had secured a general advance of 15 per cent. and the greater advances had been made in isolated cases where the rates paid previouly had been below the average, the increases being made to bring them up. In reply to a question as to whether the Amalgamated Association had entered upon a strike to secure an increase the witness said they had made the usual demonstration and had demanded an advance of 20 per cent., the company ultimately conceding them 15 per cent.

Dismantling Plants.

Taking up the question of the disposition made of the plants purchased by the company the witness said that he believed two had been dismantled in Baltimore and one in Brooklyn. He had no knowledge of any that were stopped for certain periods and then started up, but he presumed such incidents had occurred. In answer to a question as to why the plants were dismantled he said that they were inefficient or badly located, and therefore it was not as profitable to continue them in operation as to duplicate their production in other better located mills.

Professor Jenks asked the witness if prices had increased more in the United States than in Wales since the American Tin Plate Company were organized, to which he replied that he could not answer specifically without consulting official quotations. In answer to a question the witness said that some employees of the company had stock in it, but he did not know that it was a part of the company's policy to encourage employees to buy stock. It was his impression that nobody was encouraged to buy, though of course they could do so if they cared to. As to whether the company granted special privileges to certain jobbers the witness said that all were treated exactly alike, no preferences being shown to any one.

Contracts for Raw Material.

"What are the relations between the National Steel Company and the American Tin Plate Company?" asked Professor Jenks.

"We buy some of our material from the National Steel Company," replied the witness, "though I cannot say how much or what proportion of our entire consumption. We are not limited, however, to the National Steel Company, for we also purchase of the Carnegie Company and of the Illinois Steel Company."

"Do you make exclusive contracts," asked Professor Jenks, "either to take all the output of any particular steel company or to buy all your material of that company?"

"That matter is outside of my jurisdiction, but I do not know of any such contracts."

The Tariff.

Here Professor Jenks took up the question of the influence of the protective tariff upon the tin plate industry in America, asking what the protection accorded the industry in 1890 had done to build it up.

"The tariff has been most beneficial," replied the witness, "and without it the present condition of affairs would have been an impossibility."

"What would be the result if the tariff should be removed?"

"It would kill the industry."

"Could you have organized your combination without the tariff?" asked Commissioner Livingston.

"Without the tariff," replied the witness with much emphasis, "there would not have been anything to organize."

"What would have followed had you not made your combination?" asked Professor Jenks.

"Some of the 35 or 40 concerns in our company would have gone into bankruptcy, some would have barely survived and a few of the strongest might have made some money."

"Have any firms in the industry gone into bankruptcy?"

"I believe some that are exclusively engaged in dipping have failed."

Taking up the subject of foreign competition Professor Jenks asked if there was not considerable importation of tin plate at the present time, to which the witness replied in the affirmative, though he said he did not have the figures at hand showing the exact amount; they could, however, be found in the official customs returns. There was very little export trade in tin plate at the present time, he said, though the American manufacturers were sending small quantities to Canada, Mexico, &c.

Advantages of Consolidation.

Referring to the benefits which accrued to the producers as the result of the combination the witness said it had enabled them to improve their mills physically and it was a great advantage in marketing the product.

"As to the physical advantages you speak of," said Professor Jenks, "could they not all be secured in a mill costing only $1,000,000 as well as in mills managed by a combination having a capital stock of $50,000,000?"

"It is possible," replied the witness, "that in the matter of production a $1,000,000 mill might be able to secure the greatest possible economy, but one of the most important points of advantage in our combination is the fact that we can now supply territory from the most convenient mill, thereby securing the lowest freight rates. We also effect important economies in the matter of general supervision, superintendence and in the concentration of selling departments."

"How many selling agents or traveling men did you dispense with when you consolidated your 30 or 40 companies under one head?"

"I could not possibly tell you. There was a great difference in the manner in which the selling departments of the different companies were organized. Some had very efficient departments and employed a corps of travelers, while others marketed their product chiefly through agents appointed in various parts of the country."

The witness was asked if the American Tin Plate Com-

pany secured lower freight rates than their competitors because they were so large a shipper, to which he replied that the company enjoyed nothing but the regular tariff. The only advantage they had in point of freight rates was their ability to ship to a customer from the nearest mill, which often effected an important saving. No rebates of any kind were allowed by the railroads, but of course careful routing to secure the lowest rates was usually done.

Continuing, the witness said in reply to a question by Professor Jenks that the company paid no dividends on the common stock, but that they had recently paid a third dividend on the preferred

"Do you expect," asked Commissioner Livingston, "to pay dividends on your common stock?"

"I haven't the remotest idea," replied the witness. "That is a matter of policy for the company to determine."

"Let me put that in another way," insisted Mr. Livingston. "Do you earn money enough to pay dividends on your common stock?"

"I believe so," replied the witness.

Professor Jenks then asked Mr. Graham if he could furnish the commission with the capital stock of each of the component companies before they were absorbed by the trusts, to which he replied that he could not engage to do so, as he doubted if the information could be had.

Replying to a question as to where the books of the American Tin Plate Company were kept the witness said they were in the custody of Auditor Beaver, but as to the exact whereabouts of the stock books he did not know.

Returning to the question of the advantages secured by the companies in their consolidation the witness said that all the plants were better off than before, as they were enabled to make their products for less money and were better managed in every detail. As to why the company had not issued the $4,000,000 of stock, being the difference between the authorized capital of $50,000,000 and the $46,000,000 which have been issued, Mr. Graham said he supposed the total amount was not needed and the balance was therefore withheld.

Replying to a question as to whether there were any mills producing black plate and tinning the same outside the combination the witness said there were quite a number, and mentioned the St. Louis Stamping Company and mills in Wheeling, W. Va.; Harrisburg, Washington and Avonmore, Pa., and Cincinnati.

"Do you think," asked Commissioner Clark, "that the recent advance in the price of tin plate is only temporary and do you hope that the result of your combination will be to cheapen the product?"

"I really could not undertake to look so far into the future."

In reply to Commissioner Kennedy the witness said that the American Tin Plate Company now employed from 20,000 to 25,000 men. As to whether they all received good wages he said that some thought that they did not, but that in his opinion the compensation on the average was very good.

"Is it not true," asked Commissioner Clark, "that tin plate is cheaper and that more men are employed in its manufacture since the tariff was put on in 1890?"

"Undoubtedly," replied the witness.

"Are you making more money on the contracts recently closed by you than upon those you made last January?" asked Commissioner Livingston.

"That would be a very difficult question to answer," replied the witness, "for the matter of deliveries would have a very important bearing on it. I can answer your question in part by saying that probably we are not making so much money since prices went up; in other words, we have not kept pace with advancing prices."

Replying to Commissioner Farquhar the witness said that the chief market for pig tin was London, as the chief trading in that commodity was done there. No tin was produced in the United States at the present time.

"How extensive proportionately are your sales of black plate for tinning?"

"Very extensive," replied the witness. "Perhaps 20 per cent. of our output is in that form."

"Are these sales open to all buyers?"

"No, we do not sell to retailers nor to consumers."

"Is it true," asked Professor Jenks, "that certain dipping concerns sell at retail and hence that you refuse to sell black plate to them on the ground that they are retailers?"

"No, sir," replied the witness. "I know of no concern in the dipping line to which we refuse to sell."

In reply to Commissioner Clark the witness said that the machinery used to-day in this country in the tin plate industry was heavier, stronger and better generally than six or seven years ago and a considerable saving in breakage was effected. The same number of men were employed in a black plate mill here and in Wales to-day as were employed seven years ago. A much larger number of sizes of plate were turned out to-day than formerly. Comparing the wages paid in the United States in the tin plate industry with those in Wales Mr. Graham said they were two and one-half to three times as large. As to cost of living he said a great deal depended on the way the men lived.

"How does the American product," asked Commissioner Clark, "compare with the Welsh in point of quality?"

"It is much better in the quality of the steel plate and in the evenness of the coating."

"How do you explain the fact that with only a limited number of experienced men in their employ the American manufacturers in a few years have been able to turn out a better product than the Welsh manufacturers, whose employees have grown up in the business?"

"I can hardly say," replied the witness, "unless it is that we learn faster," a reply which elicited smiles of approval from several members of the commission.

In answer to Professor Jenks Mr. Graham stated that the combination had secured another advantage not previously referred to, in that they obtained control for all their plants of several patents which were formerly the properly of individual producers. A tinning machine, for example, had been secured for general use which was of great value.

Quotations in "The Iron Age."

"Where can we get the prices covering the regular market for tin plate for the past ten years?" asked Professor Jenks. "Can we find them in the New York *Metal Market*?"

"I do not know," replied the witness. "I never heard of that paper until a short time ago."

"How about *The Iron Age*?" asked Mr. Farquhar.

"Its prices would be correct," replied the witness.

"You think they could be relied upon by the commission?" asked Professor Jenks.

"Yes," replied the witness; "they would be substantially correct."

Recurring to the question of the disparity between the total capitalization of the American Tin Plate Company and the cost to the combination of the plants absorbed by them Professor Jenks asked if the mills could be rebuilt for the amount of the preferred stock, $18,000,000, to which the witness replied that there was considerable cash in the hands of the individual companies when they were absorbed, but it was probable that the plants could not to day be reproduced for less than $18,000,000. The balance of the capitalization was the good will of the business, which was very valuable.

F. S. Wheeler of Chicago, treasurer of the American Tin Plate Company, was then briefly examined on one or two points which had already been touched upon by Mr. Graham. Professor Jenks, who led in the examination, sought to find out where the books of the company were kept, and in reply to questions Mr. Wheeler said the company had offices in Chicago, where books were kept covering their local business. They also had a general office in New York and an office in Orange, N. J., the State in which the company were incorporated.

"Do you keep your transfer books in your office at Orange?" asked Professor Jenks.

"I believe a record is kept there," replied the witness.

"Is your Orange office open to the public during business hours?"

"I presume so."

"Can any stockholder find out the names and the amounts of the holdings of other stockholders by applying to your office in Orange?"

"I presume so."

Professor Jenks then repeated the questions he had asked Mr. Graham concerning the making of exclusive contracts between the American Tin Plate Company and the National Steel Company and between the company and their jobbing customers, to which Mr. Wheeler replied that he had no official knowledge of such matters, but did not believe that any such contracts were in existence. In reply to a question by Mr. Farquhar as to the reason for the "inordinate difference" between the cost of the component plants and the total capitalization the witness said that he thought Mr. Graham had explained that fully as being due to the value of the good will. This closed the first day's session.

At the second day's session of the Industrial Commission devoted to the examination of representatives of the iron and steel industry four important witnesses were heard—Daniel G. Reid of Chicago, president of the American Tin Plate Company; William E. Reis of Chicago, president of the National Steel Company; Charles S. Guthrie of Pittsburgh, president of the American Steel Hoop Company, and William H. Moore, the organizer of the three combinations mentioned. The testimony of these witnesses was given with great frankness and produced a most favorable impression upon the members of the commission, the majority of whom were somewhat prejudiced in advance against these combinations, chiefly because of their apparent intimate relations with each other and the disparity between their capitalization and their apparent assets.

Testimony of Daniel G. Reid.

Mr. Reid, who was the first witness, stated that the American Tin Plate Company were incorporated in New Jersey, where their books have been kept except on occasions when they were taken to other cities. The New Jersey law had been complied with in all particulars and stock had been transferred in Orange, N. J., in New York and in Chicago. In answer to a question as to why the combination of the tin plate companies had been made he said that it was brought about because the competition to which the mills were subject was so severe it was found to be driving the companies into bankruptcy. At that time there were 39 mills in existence and many of them would certainly have been closed down if the combination had not been formed. The manufacturers had appealed to Judge William H. Moore to arrange a combination and he perfected a plan under which he practically bought up all the mills and then formed the American Tin Plate Company, to whom they were turned over. This company had a capital stock of $18,000,000 preferred and $28,000,000 common, the surplus $10,000,000 of common stock having been assigned to Judge Moore to cover all the expenses of bringing the companies together and perfecting the organization of the syndicate. No control was exercised over Judge Moore as to the disposition of this stock, which was put in his hands to do with as he saw fit.

Taking up the question of the effects of the combination Mr. Reid declared that wages had been advanced 15 per cent. in the case of skilled labor and 20 per cent. in the case of unskilled. Tin plate had gone up from $2.60 per box to $4.65, but the increase was due to the higher cost of raw materials as well as the advance in wages. The American Tin Plate Company now employ 2000 more men than were employed by the component companies when the organization was formed, and the company now pay out $2,000,000 per annum more than the individual manufacturers did formerly. The company now have an agreement with their workmen which will hold until July 1 next, but if prices of steel and other materials used in the tin plate industry should go up to the figures that have been predicted in some quarters it was difficult to see how the company could continue to operate except by cutting the wages of the men. It was possible that they could get a little more out of the consumer in the way of increased price, but hardly sufficient to prevent the cutting of wages.

In reply to a question as to the character of the contracts made by the American Tin Plate Company Mr. Reid said that there was no unfair discrimination. They have sold their tin plate to any jobbers who have good credit, though certain dealers had their special brands which could not be handled by any one else. As to contracts with the manufacturers of tin plate machinery the company have an agreement with two-thirds of the manufacturers of rolls for tin plate work, by which they agree to take all such rolls that may be turned out, and as this agreement continues these mills will not sell rolls to any one else for rolling tin. This, however, did not prevent manufacturers outside the company from obtaining rolls, as one-third of the makers of this class of machinery had no contracts with the American Tin Plate Company and are at liberty to sell rolls to any one they desire.

Professor Jenks sought to ascertain whether the combination had resulted in closing down tin plate concerns that didn't go into it, and the witness said that since the combination was effected 12 or 13 mills had been shut down because of their isolation and the impossibility of operating them to advantage, but in the same length of time 25 new mills in different parts of the country had been opened.

Economies Effected.

The combination, the witness said, had been rendered profitable by various economies which had been effected. There was a saving in the office forces of the 39 mills taken into the organization, but nothing had been saved on labor in the shops. Some office sinecures had been wiped out, but as a rule the men relieved from duty in the offices who were valuable workers had been transferred to the principal offices of the company in New York and Chicago. Because the combination were a very large buyer of steel they were able to secure their raw material at 2 and 3 cents a pound less than a small buyer would pay. No great saving had been made by dispensing with the services of traveling men, for the reason that very few of them had been employed in the tin plate business by individual manufacturers. As a rule one of the proprietors of a mill would look after any big order that could not be attended to by mail and traveling men were not depended on. The proprietors of the independent mills had been largely retained by the combination as salaried managers, and this arrangement had proven very satisfactory.

The commission sought to secure detailed information as to the effect of the tariff on the industry, and in reply to several questions Mr. Reid said that there could be no such industry without the tariff. He had been a stockholder in a tin plate company since 1891 and actively in the business since 1895. Its growth and its existence even were due to the tariff. At the outset the American companies employed all Welshmen, but now about 50 per cent. of the workmen are Welsh. The tariff would permit the price of tin plate to run up 50 cents a box without meeting foreign competition, and under present conditions there is no importation of tin except for the purpose of exporting it again.

Wages in the Tin Plate Industry.

As to wages paid, the witness said the annual pay roll of the American Tin Plate Company is about $10,000,000 and some very high wages are paid, some of the rollers making as much as $10 a day. These men he considered better paid than any other mill employees. They were necessarily skilled men, but if clever they could learn the business in three years. The work, while arduous and under high temperature, was not considered unhealthy. A tinner working his turn would make from $2.50 to $3 per day, but they could hardly be called skilled men, as they were usually farm boys and boys around the towns who learned the business in three months. Ordinary day laborers were paid $1.40 a day, and women, who received the lowest compensation, earn about $1 25 a day. Taking a tin mill plant he thought the wages throughout of employees would average $2.50 a day. In Wales a roller would not receive more than $3.50 a day as against $10 in this country. The establishment and development of the industry in the United States had kept $35,000,000 here instead of sending it abroad in exchange for the foreign made article, and in spite of the recent advances in the price of tin it is now sold at $1.50 to $2 a box less than before it was manufactured in this country.

Replying to a question as to how long the present high prices of tin and products from which it is made would probably continue Mr. Reid said he could only give his personal opinion, and that was that they would run through the present year and probably through six months of the coming year. The tariff was not responsible for the present high prices of these products, nor had the tariff anything to do with the formation of the American Tin Plate Company as a combination of the various mills. The principal manufacturers were all anxious to get the price of the product down, but of course could not do so while the raw materials were so high. He hoped to see the day when the American Tin Plate Company could ship tin out of the country, but he thought the time when tin could be shipped into the principal foreign markets in competition with England was a long way off because of the tremendous difficulty to be overcome in the difference in cost of labor.

Replying to a question as to the consumption of tin Mr. Reid said that the world's product of tin plate was about 13,500,000 boxes, of which the United States consumed about 9,000,000 boxes. In England there are 400 mills and in this country more than 300 mills. About 100 of the English mills are idle. The American mills were more efficient, turning out about 30 per cent. more per mill than those operated abroad. The American Tin Plate Company manufactured about 90 per cent. of all the tin plate made in this country. The company controlled about 300 mills, but outside of them there were 27 mills in six different plants, having a combined capital of about $2,500,000.

Recurring to the organization of the so-called trust the witness said that Judge Moore had brought it about by purchasing the individual plants on a cash basis, selling to their owners stock in the combination if they desired to have it, giving $100 common and $100 preferred for each $100 of cash consideration. Commissioner Clark asked why common stock was issued when the preferred stock would have covered the transaction, to which the witness replied that he supposed that those who took the stock probably felt that the preferred paid them for their plants, while the common was in the nature of a bonus. It was the popular idea that the plants were worth more in combination than they were as individuals, and as their owners received only the value of their plants in preferred stock the good will of the combination might be said to be represented by the common stock. There was no truth, the witness said, in the statement that the price of tin plate had been advanced arbitrarily by the company, the fact being that while it had followed the advance in the cost of raw material it had not increased proportionately. Pig tin, for example, had more than doubled in the same period. The mills not in the combination sell plate rather above the price asked by the American Tin Plate Company. As to the cost of constructing a tin mill plant Mr. Reid said that it would be difficult to estimate, but that probably such a plant that would have cost $400,000 a few years ago would to day cost $500,000 or $600,000, and it would require at least $25,000 as operating capital for such a plant.

The National Steel Company.

The next witness was Mr. Reis of Chicago, president of the National Steel Company, a corporation which he stated was organized under the laws of New Jersey since February, 1899. When asked as to whether the company maintained any regulations as to the keeping of stock books Mr. Reis produced a series of resolutions, which he said had been adopted by the Board of Directors, which provided that the stock books should be kept open for inspection at an office to be maintained in Orange, N. J., accessible during business hours at all times. The resolutions also provided for the appointment of the New Jersey Registration & Trust Company as the agents of the National Steel Company, for the purpose of complying with the law. Mr. Reis added that transfer offices were also maintained in Chicago and in New York.

Replying to Professor Jenks the witness said that the capital stock of the company was $27,000,000 preferred and $32,000,000 common He was not personally familiar with the origin of the organization, as the plant with which he was connected was not one of the first to enter the combination. Without undertaking to say what others had done he stated that his own company put a cash price on their plant, which was the price at which another concern had offered to buy it within 30 days previously, and as this price was accepted by the organizer of the combination the deal was closed and the plant was paid for in stock on the basis of $100 in preferred and $100 in common for each $100 of agreed price. His plant had been known as the Shenango Valley Steel Company of New Castle, Pa.

The product of the National Steel Company, the witness said, was chiefly steel billets and slabs, and in answer to a question by Professor Jenks he said that while the company sold largely to the American Tin Plate Company they also had customers among the independent tin plate producers and were now shipping to a tin plate mill in Cincinnati. The raw material consumed by the National Steel Company was iron ore, of which 3,000,000 tons were produced in the Lake Superior region, 1,400,000 tons being from the company's own mines at Iron Mountain and Ishpeming, Mich. The mine at Iron Mountain was formerly owned by the Chapin Mining Company and had been leased within the past 60 days on a royalty basis.

The present capacity of the National Steel Company was 5000 tons per day, produced in six plants having a total of 15 furnaces. The largest plant turned out 1800 tons per day. Replying to a question as to the cost of constructing a steel plant the witness said that in previous years a table had been prepared showing the cost of a plant having a capacity of 500 tons per day to be $500,000. Under present conditions the cost had greatly increased and the National Steel Company were at present engaged in building three plants, each of which would cost three times as much as the figure indicated by the table referred to. The witness said that he thought 50 per cent. of the capital of a steel producing company would be necessary to run the business properly. It took a great deal of ready money to gather stores of iron ore, coal, &c., which had to be laid in during the season of navigation for the rest of the year.

The Advance in Prices.

At the request of Professor Jenks the witness submitted a table of prices of Bessemer steel during the past nine years and in reply to a question as to the cause of the recent heavy advance in the cost of iron and steel of all kinds he said:

"I think perhaps the simplest explanation is that manufacturers and consumers are afraid there isn't enough to go around. Recently our exports have been very heavy and at the same time consumption has increased rapidly. The result has been that we have all been cleaned up of every variety of material, and we have suddenly discovered an enormous shortage. Steel producers are now working full capacity everywhere and of course before long we expect a reaction when the supply more nearly equals the demand."

"Are manufacturers getting the high prices quoted in the newpapers for the product they are now sending out?"

"Oh, no. For example, we have on our books for delivery over 700,000 tons of steel for which we will receive prices made before the present quotations were reached. Our deliveries made during the month of August were made on a basis of $21 per ton, while I believe the average quotations were about $34."

Wages.

"How about wages?" asked Mr. Farquhar.

"They have advanced all along the line in every department from 15 to 25 per cent."

The witness added that about half the men employed belonged to the Amalgamated Association, but all workmen received practically the same wages as the Amalgamated scale, which was adjusted once a year and under which non union labor profited by the negotiations of the Amalgamated Association.

"Then," said Commissioner Kennedy, "the Amalgamated Association practically keeps up the wages for the unorganized men?"

"Practically, yes," assented the witness.

Advantages Through Consolidation.

Taking up the question of the advantages secured by the combination of plants and capital Mr. Reis said that the company were enabled to buy and operate mines of iron and coal, to ship to customers from the most convenient points, to superintend plants at a minimum of expense and by other economies to save large sums of money. It would be absurd to call the National Steel Company a "trust" in the ordinary acceptation of the term, as they produced only about 18 per cent. of the Bessemer steel made and had several very strong competitors. It was absolutely necessary for the company to own their mines in Northern Michigan and was more important than owning transportation lines.

When asked as to the effect upon the steel industry of the tariff the witness said that it had no direct bearing upon the business of the National Steel Company, as no billets were imported under any circumstances. Indirectly, however, it was of value, as it had an important effect upon the tin plate industry, which consumed large quantities of steel.

"What are the relations between the National Steel Company and the American Tin Plate Company?" asked Professor Jenks.

"Friendly," replied the witness with a smile, adding: "We have no official relations."

Continuing the witness said that the treasurer of the National Steel Company was also treasurer of the American Tin Plate Company and the American Steel Hoop Company.

"Are you not working together?"

"Our business is entirely separate in every particular, but I will say very frankly that we are working harmoniously, which is the purpose of our organizations."

Professor Jenks asked the witness as to the number of stockholders in the National Steel Company, to which he replied that there were about 1100 on last dividend day, which was at least 100 for every one in the same companies before the consolidation. He thought about one-third of the preferred stock of the company was on the New York market. As to the common stock he could not say; it paid no dividends, while the preferred had already paid two dividends of 1¾ per cent. each.

Commissioner Farquhar then asked the witness as to what was done with the $5 000 000 worth of common stock that was not divided pro rata with the preferred, to which the witness replied that it might have been used to defray the general expenses of the organization, adding with a smile: "General expense covers a multitude of things. Frankly, I suppose the commission understands that all such schemes are floated on the difference between the preferred and common stocks." As to whether the National Steel Company were earning more than the dividends they were declaring on the preferred stock the witness replied in the affirmative, and when questioned as to whether they anticipated paying dividends on the common stock he answered smilingly:

"We have hopes."

Mr. Reis was not willing to tell the commission what the earnings on the common stock were, saying that he did not care to give publicity to such a statement.

Recurring to the matter of the leasing and purchase of mining properties the witness said that it was anticipated that the Chapin Company property in Michigan would produce 900,000 tons of ore this year. Since it was first opened it had produced a total of 7,000,000 tons and there was in sight at least 6,000 000 tons additional. There was so much ore in sight on the property at Ishpeming that no attempt had been made to estimate it. The actual value of such property was problematical because it depended upon the prosperity of the industry to which it was tributary. An ore mine would be worth 200 per cent. more to-day than a year ago.

The American Steel Hoop Company.

Charles S. Guthrie of Pittsburg, president of the American Steel Hoop Company, was the next witness. He said that his company were incorporated in New Jersey April 17, 1899, and he presented the commission with a copy of a series of resolutions as to the maintenance of offices, stock books, &c., practically identical with that presented by Mr. Reis on behalf of the National Steel Company. He said that the capital stock of his company was $14,000,000 preferred and $19,000,000 common and that the products included 85 or 90 different sorts of light iron and steel manufactures, including band and hoop iron, rods, &c.

Many notable economies had been secured by the combination of manufacturers, one of the most important

being the arrangement by which all goods of certain kinds were turned out by certain mills, thus obviating the necessity of constantly changing the rolls to produce different goods. There was great economy in management and the mills operated as checks on each other, the daily reports showing the tonnage of each mill and enabling the management to demand a larger output from superintendents who were not getting the best possible results out of the mills in their charge. There was also a great saving in freight, as customers' orders were filled from the nearest mill when practicable.

Replying to Professor Jenks the witness said that the plants composing the combination had formerly been known as the Union Iron & Steel Company of Youngstown, Warner and Girard, Ohio; P. L. Kimberley Company of Sharon, J. Painter, Sons & Co. of Pittsburgh, Wm. Clark, Sons & Co. of Pittsburgh, Lindsay-McCutcheon Company of Allegheny, Portage Iron Company of Duncansville. Pomeroy Iron & Steel Company of Pomeroy, Isabella Furnace Company of Etna and the Monessen Iron & Steel Company of Monessen.

Recurring to the question of economy in the management of the company Mr. Guthrie said that in August great care was taken to determine the fixed charges per ton on the basis of an output of 70,000 tons per month, and this item was figured down to 40 cents per ton, which was remarkably low, as independent companies usually considered the cost of selling to be from 50 cents to $1 per ton. The witness said the company had not shut down any plants but were running them all practically at full capacity.

The Tariff.

When asked as to the effect on the iron and steel industry of the present tariff Mr. Guthrie said:

"It is of the greatest help to us, not because we cannot compete with foreign producers at their market prices but because ocean freights are so low that English and German companies can ship their surplus to New Orleans and Galveston and undersell us on goods shipped by rail from Pittsburgh to those points. The foreign manufacturers have always sought to make a dumping ground of the United States. They market as much of their own product as they can at fair prices, and what they have left over they try to ship over here and get rid of it at cut rates. They make their money on what they sell at home and they reduce the cost of manufacture by turning out heavy tonnage, not calculating to make a dollar on their surplus. If it were not for the tariff we would have to meet this competition all the time.

"We are not afraid of foreign manufacturers," continued Mr. Guthrie, with much warmth, "for in the markets of the world we can undersell them and make money at it. Wherever we meet them on anything like an equality we beat them, and they know it. I have two partners who are interested in two European steel works, and long ago they told me that the foreign manufacturers only hope to control their immediate market, which would keep them running full time, and were quite prepared to resign the outside markets to the American producer."

Judge Moore's Testimony.

The last witness of the day was William H. Moore, the organizer of the three companies heretofore mentioned. Somewhat to the surprise of the members of the commission Judge Moore told in detail the story of the negotiations which resulted in the formation of the three combinations referred to, describing his own part in the transactions very frankly. He said that the task was a very difficult one, owing to the large amount of money required to carry it through and the necessity of convincing capitalists and manufacturers that the project would be a success. He had previously organized the Diamond Match Company, the National Biscuit Company and the Union Bag & Paper Company, and he thought it was his success in handling the National Biscuit Company negotiations that inspired capitalists and others with confidence in him.

"The method of organization," said Judge Moore, "was simple in its outline, though very difficult of consummation. Not long after the organization of the National Bicuit Company a committee of manufacturers came to me and asked me to combine their plants. I was very busy at the time and it was a year and a half before I was able to undertake the work. I did not attempt to organize such a combination as is usually effected. I simply dealt with each firm separately, offering to buy it myself for cash, with the understanding that if they preferred they might take stock in the combination. No great amount of money would have been required if we could have had a guarantee of the success of the deal, but I had to be prepared to pay cash for every plant if it was demanded. As a result I was obliged to act as lawyer and banker and to borrow several million dollars on my own account. I not only practically bought the plants but I had to put up working capital for them, and in the case of the American Tin Plate Company I supplied nearly $5,000,000. I was obliged to use the greatest care in keeping my transactions with the different firms confidential, for each manufacturer was perfectly sure that his plant was the best in the business, and if there had been any general understanding as to what each received I never could have got them together."

Commissioner Kennedy inquired whether the witness dared to say whether he received for his services the entire $20,000,000 of common stock issued in excess of the preferred stock by the three companies, to which he replied that the stock was used for various purposes. Large sums of it were employed in bringing manufacturers into the combination. The witness also saw to it that employees who wanted to subscribe for stock were enabled to do so.

As to the organization of the company at the outset Judge Moore said he had personally and arbitrarily selected the first Boards of Directors. He was forced to do this in order to protect the capitalists who had entrusted their money to him. His sole purpose was to put in the best management possible, and wherever high class talent was found it was utilized.

"The impression is general," said Mr. Farquhar, "that these companies are heavily overcapitalized. Is that true?"

"There is absolutely no basis for such an impression," replied the witness, "and the best evidence of that fact is found in the market quotations of the combined preferred and common stocks, which in the case of all these companies have soon gone to a handsome premium. The companies are earning and paying 7 per cent. on the preferred stock, and certainly no one has been deceived as to the character of the common stock, for everybody knows that it represents no assets."

In conclusion Mr. Moore said that he regarded the New Jersey corporation law as the very best in the country and as calculated to do a great deal toward developing American industries. It did not differ greatly from the English law, which in his opinion would ultimately be taken as the basis for practically all our corporation laws. His advice to any young man intending to be a corporation lawyer would be to go to England and study the English laws for a year. He had no doubt that ultimately many other States would accept laws as liberal and fair as New Jersey. So far as the United States is concerned the industrial corporation had come to stay, and the more it was investigated the sooner the people of the country would become satisfied of its utility and general desirability.

W. L. C.

The Standard Seamless Tube Company. — The largest industry in Ellwood City, Pa., the Standard Seamless Tube Works, is now about completed, and the machinery is being placed. The building is 220 x 450 feet, and was constructed by the Shifflin Bridge Company of Pittsburgh. The new works will manufacture steel tubing by the process known as cold drawing from a solid billet, which comes from Germany, where it was invented by the Mannesmann Brothers. Many improvements in the process have since been made, and it is the plan of the company to make tubing of a larger size than has been made heretofore anywhere. The application for a charter is being made by Charles E. Pope, John H. Nicholson, W. H. McKelvey, J. Erastus McKelvey and Herman J. Veeder.

The concession of the Government of Nicaragua to the Maritime Canal Company of the United States to construct a deep water canal from the Atlantic to the Pacific ocean expired on October 12, and the concession granted to the company known as the Eyre-Craigin syndicate became operative. It is understood that the Maritime Canal Company will ask the United States Government to make representations to the Government of Nicaragua looking to the extension of their concession under a clause which provides an extension of the time of construction if the company meet with extraordinary difficulties. It is claimed that frequent revolutionary troubles in Nicaragua have delayed the work.

The bankruptcy was announced last week of Maudsley Sons & Field, one of the largest firms of boiler and engine manufacturers in Great Britain. The concern were established over 50 years ago and were always regarded as among the foremost in their line, doing an immense business in the British colonies and in the supply of boilers to the British Navy.

The American Window Glass Company have made an extensive deal in gas territory in the richest part of the Indiana gas field, securing 191 leases covering 10,000 acres. The deal was made to secure a fuel supply for the Indiana glass factories recently acquired by the combination.

HARDWARE.

Condition of Trade.

THERE is little new to report in regard to the state of the market. Advances are still being announced in various lines, the most important being Wire and Wire Nails. Both manufacturers and jobbers find a large demand made upon them, and the volume of business is exceedingly heavy. There is a feeling of general confidence in the permanence of the prosperity which has visited the country, and a good many, anticipating a continuance of high prices for a considerable time, are buying very liberally, feeling that the goods are a safe purchase at ruling prices. Manufacturers are placing exceptionally heavy orders for next season in lines which have not been materally advanced, regarding it as probable that high prices will hold on account of the increased cost of manufacturing goods, and the disposition to avail themselves of the upward trend of the market, which led them to lay in large stocks some time ago, still influences many to continue the same policy. There is, however, on the part of some a disposition to realize on purchases already made before committing themselves to an aggressive or speculative policy for next year. The market is meanwhile being scrutinized very carefully for indications of any weakening in the raw material or of any let up in the demand, as merchants realize that any such developments will speedily make themselves felt in the general tone. Conservative men recognize that prices on certain lines are not far from the danger point, and the conviction is expressed that if there is to be, before next July, any serious yielding in prices it is advisable that the trade should be prepared for it, and the opinion is held that it would probably be for the ultimate benefit of the trade to have some reaction from extreme prices before long, rather than have the change come a little later in the form of a radical break which might prove disastrous. So far as the demand is concerned there is as yet no diminution of it. While high prices are undoubtedly curtailing building and enterprises of various kinds and also to some extent the sale of certain classes of Hardware, the stimulus which the market feels under the advancing prices thus far more than makes up for any such loss. It is not unlikely, however, that the restraining effect of the high prices, especially if they should continue to advance, will be more and more felt. There continues to be a tendency toward the formation of pools or combinations of one kind or another, but the project of getting Hatchets under control of this kind has not yet succeeded, and doubts are expressed by well-informed parties in regard to the ultimate success of efforts in this direction.

Chicago.

(By Telegraph.)

The Shelf Hardware trade keeps up its large volume. Much more business could be done, as previously reported, if it was possible to receive better supply of such goods as are now in most demand. A shortage is reported in Corn Knives, Hay Knives, Corn Huskers, Axes, Axe Handles, Grain Scoops and other tools and implements most needed at this season. The trade is also still suffering for the lack of enough Coal Hods, Elbows, Stove Boards and other household goods of a seasonable character. Shortage is further seen in best Sheet Iron, which is now in sharp demand for finished goods of high grade. Jobbers report the largest business this year they have ever had in Machinists' Tools. The demand for Carpenters' Tools has also been much more satisfactory than usual. Other Mechanics' Tools have been moving freely. Among the advances of the past week was 15 cents per 100 on all Wire products, including Wire Nails, 1 cent per pound on Rope and 5 per cent. on Bale Ties. Everything is now on a much higher plane of costs, and no speculative stocks are pressing on the market in any direction. The changed condition is illustrated by a transaction of the past week in which a jobber purchased goods for next year's requirements, for which he pays 80 per cent. more than he would have been glad to sell them at only six months ago. A heavy trade is reported by jobbers in Galvanized Sheets. The Tin Plate trade is also of unusually large volume, jobbers selling far more than they had expected. The Heavy Hardware trade is in excellent shape, with this month's business promising to exceed that of last month, which was the largest ever known.

St. Louis.

(By Telegraph.)

The trade's expectation has been met to-day in an advance of 15 cents on Wire Nails. All Wire products have been affected, Poultry Netting being possibly the only exception. Poultry Fencing and Gates, also Field Fencing, command higher prices. Barb Wire continues in remarkably good action, and it is questionable whether the 15 cent raise made on it will check the demand. Bale Ties have sustained 5 per cent. advance. Buying ahead on Wire Cloth and Poultry Netting has not abated, and dealers seem pretty well satisfied that next year's business must be anticipated as to supply if not price. Seasonable goods are in active call, and jobbers' shipping departments show the outflow as embracing the general line of Hardware and House Goods. Without exception the Stove founders and Steel Range manufacturers throughout this district are filled up with work, and many of them are completely sold out of popular styles and sizes. The demand has been so heavy that patterns long out of the sand have again been sent into the foundry. Stove Boards are finding their way into jobbers' hands with more freedom, but a little late as to delivery. Trade in Builders' Hardware continues remarkably strong, although it was expected that contractors had secured everything needed for this season's operations. No appreciable check is seen in the Heavy Hardware trade. Iron and Steel, both regular and tire lengths, are moving comfortably, and mill shipments are becoming easier. Wagon stock of all classes is finding ready sale and thoroughly seasoned hardwood is enhancing in value. The shortage of cars is becoming a serious question to all shippers. Railroads, as a general thing, report use for additional rolling stock, especially in merchandise cars. Not many months ago passenger trains all but picked their way through strings of empties at terminals and way stations. To-day equipment is wearing out, not rusting away. Time ought not be wasted in wondering how long present activity will prevail, but the blessing of prosperous times should be energetically shared in.

Cleveland.

THE W. BINGHAM COMPANY.—The demand for general Hardware still continues to be excellent, notwithstanding the general complaint of the high prices on staples. The only falling off that can be appreciably noticed is on Wire, both Barbed and Plain, Wire Nails and Shovels. The manufacturers, when spoken to upon the subject, come back at you with the assertion that they were never so busy in their lives. This may be true, but they must be filling old contracts, and it will be only a matter of a little time when they will find themselves in want of orders. A general canvass of our trade has developed the fact that stocks on general Hardware are yet abnormally large, while those of Wire and Nails are much larger than usual and but very little demand. Farmers say they will not build fences while Wire is held at present prices, and still there is talk of further advances. Another noticeable fact was developed in this canvass, and that is that stocks and trade in manufacturing districts are very much larger in proportion than those in the agricultural districts. Taken on the whole, however, there seems to be no reason to fear but what trade will continue good for some time to come, except, possibly, upon the articles above mentioned.

Louisville.

W. B. BELKNAP & CO.—The volume of business continues eminently satisfactory. Deliveries on all classes of Heavy Goods are extremely slow. The high prices so far do not seem to have checked the demand. Various rumors of further advances are current, and after recent experience find ready credence—or, in other words, no one can say they will not occur.

Horseshoes have made another jump, or upward kick it might with propriety be termed, and promise a much higher level for next year than has been known for many years. It looks as though they might be subject to control.

The extreme drought is beginning to tell on the country business locally. We have had scarcely any rain here for three months, and the streams and springs are going dry. It would be a great relief to the railroads should we have our usual fall rains and the river be open to traffic again. The additional tonnage thrown on the railroads by reason of the Ohio and its tributaries being too low for navigation is almost incalculable.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—Farmers show a disposition to hold wheat and hops for higher prices. This, of course, will hold back business to a certain extent. Hay and oats bring a price that we did not expect three or four months since, owing to Government demand for shipment to Manila. These products owing to drought in California sold well for two seasons past, and now this new demand developing we are assured of good figures for this year's crop. The lumber business shows a marked improvement in the last two years. When the new mill is finished that is in course of construction the output of our city will be 1,000,000 feet per day, establishing this business as one of our main industries.

Should any one have predicted ten years ago that money would be worth but 3 per cent. in this section before 1900, he would have been laughed at. Such, however, is the case to-day, our leading savings bank since September 1 only paying 3 per cent. on yearly deposits. We mention this fact to show the marked change that has come to a new country in a comparatively short time.

Collections show some improvement, but we shall expect no great change until farm products move more freely than they have up to date.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Practically speaking, the same conditions that existed at the time of our last letter continue—namely, active trade, continued strength in market prices and an unusual demand for certain kinds of special goods.

The volume of business coming through the hands of representative salesmen shows no abatement and the number of mail orders is a sign of active trade with the retail merchant. Unquestionably there is active business with the average retail merchant which it is gratifying to observe, and the signal contrast to the preceding years is quite apparent. Neither does there seem to be any abatement in manufacturers demanding further advances both in order to cover the advances of raw material and wages, never forgetting one important matter of adding (perhaps legitimate) further profit upon their output. It is not to us apparent that there is any lessened demand for goods owing to advance in prices either in building material, farm products or household Hardware. Requirements appear to be unhesitatingly purchased. Demand and supply usually depend upon the prosperity of either home or foreign (or both) markets. We are at present in an era of prosperity of both.

So far as we can see the mechanics have secured wages practically satisfactory to themselves and are all fully employed, farm products are bringing an average of fair prices and in the cotton sections there are signs of improved prices.

The National Export Exposition which is being held in Philadelphia from September 14 until November 30 is now in full blast, and is visited by a great number of persons daily. The foreign delegates to the International Congress are holding daily sessions and interesting papers are being read. These delegates are from all quarters of the globe, and are represented by over 300 persons. The American delegates from various chambers of commerce and boards of trade who have appeared here are about equal in number. The results of this International Congress cannot fail to be of great commercial advantage to the United States, and from present appearances the results will be more far-reaching than anticipated by the most ardent supporters of those who were interested in the Congress.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—On the whole, October has been favorable for trade, and the volume of business, as well as the tonnage, has come up to expectations.

In some sections there have been excessive rains, and in other parts the weather has been of the "too dry" order, neither of which conditions is the best for trade; but, taken altogether, business has probably been somewhat beyond that of any October in the past.

Crops are coming to market at a moderate rate. With the exception of flax seed, prices are somewhat lower than they should be. The farmer is getting only 16 to 18 cents per bushel for choice potatoes, and less than 60 cents for No. 1 Northern.

Well to do farmers are holding their wheat, as it certainly seems that with the wheat crop of the world no larger than it is No. 1 Hard should bring 70 to 75 cents at the farmers' elevators.

In the upturn of prices it is very unfortunate that the great commodity of wheat is not higher in the list of articles that have advanced.

We have read carefully the many and somewhat diverse expressions of opinion in the last copy of *The Iron Age* on the effect on trade of the advances in prices. Each writer is naturally affected by his surrundings, as well as, to some extent, by his prejudices. The man whose trade has been good cannot see that higher prices have hurt him, while the man with an unsatisfactory trade finds it most convenient, as well as agreeable, to charge it to high prices, trusts and other contributory evils. Perhaps if he were to make a more thorough diagnosis he would find that higher prices have not been a large factor. The causes may lie in closer competition in his own town, or from other towns; or in short crops; or perhaps more frequently the trouble comes from the conduct of the business itself. Of one thing we are certain, present prices in Hardware stocks throughout have not largely reduced the amount of bus-

iness of any considerable number of retail dealers with whom the local conditions are favorable. An occasionally large consumer of Barb Wire, for instance, may defer buying for the time from this cause, but others will largely fill the gap, and we do not believe that, at present prices and with the present buying power of the great general body of consumers, any reduction of the demand may be expected.

We do not doubt that prices may be pushed too far to hold the present rate of consumption, and we are also grounded in the belief that manufacturers are duly considering this danger, and design to profit by the experience of the past, in so far as it can apply to the greatly changed conditions of to-day.

Notes on Prices.

Wire Nails.—An advance of 15 cents per keg in the price of Wire Nails was announced by the American Steel & Wire Company, taking effect October 17. Somewhat of an improved demand for this line has been noticed during the past week. Present quotations are as follows, f.o.b., Pittsburgh, terms, 30 days net:

To jobbers in carload lots	$2.95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

New York.—The demand for Wire Nails from store continues satisfactory. The 15 cents advance per keg brings quotations at this point up to the following figures:

To retailers, carloads on dock	$3.25
To " less than carloads on dock	$3.30 to 3.40
Small lots from store	3.40 to 3.55

Chicago, by Telegraph.—Manufacturers made an advance of 15 cents on Monday, which was communicated to the trade on Tuesday. Single carload lots are now quoted on the basis of $3.25, Chicago. The demand for Nails has steadily increased and is now up to the expectations of those who were looking for a heavy fall trade. Jobbers have advanced their prices on small lots from stock to correspond with manufacturers' prices and quote $3.35.

St. Louis, by Telegraph.—An advance of 15 cents is in effect to-day, and it is too early to state what the result, if any, will be on the trade. New price on single cars to retailers is $3.30, base, St. Louis. Smaller quantities may be had at $3.40, base.

Pittsburgh.—Taking effect on Tuesday, October 17, the American Steel & Wire Company made an advance of 15 cents per keg in price of Wire Nails. This has been expected by the trade for some time. There continues to be a heavy movement in Nails, jobbers reporting that the small trade are buying very freely. The consumption of Wire Nails this year will be very largely in excess of any previous year in the history of the Wire Nail trade. The tone of the market is strong and a further advance before this month is out is probable. We quote, f.o.b. Pittsburgh, terms, 30 days, net cash:

To jobbers in carload lots	$2.95
To " in less than carload lots	2.97½
To retailers in carload lots	3.10
To " in less than carload lots	3.20

Cut Nails.—The advance in the price of Wire Nails has not yet had any effect on the Cut Nail market. The Eastern manufacturers are putting into effect an advance of 5 cents per keg, which will make the differential between Wire and Cut Nails 35 cents. It remains to be seen how general this advance will be—a matter which will doubtless be influenced somewhat by the action of Western manufacturers in Eastern territory. We accordingly advance our quotations for goods in the East 5 cents per keg, as follows, freight being added to point of destination. It is not, however, certain that this advance will be made by all the mills:

To jobbers in carload lots	$2.60
To " in less than carload lots	2.65
To retailers in carload lots	2.70
To " in less than carload lots	2.85

New York.—The market is without special features, while demand continues seasonable. The advance in Wire Nails has had some effect upon the market, as noted above. Local prices are slightly irregular. Quotations for single carloads on dock are about $2.65 to $2.70. Small lots from store are held at $2.75 to $2.80.

Chicago, by Telegraph.—No change has been made as yet, jobbers quoting $2.70 on small lots from stock. This is claimed to be below the level of manufacturers' prices.

St. Louis, by Telegraph.—A new price is named with possibly a further increase; $2.85, base, is quoted by jobbers. Local mills are doing a good volume of business.

Pittsburgh.—We are advised by the Wheeling mills that for the present at least they will not advance prices of Cut Nails. There is a moderate demand and the tone of the market is strong. We quote Cut Nails at $2.50 in carload lots and $2.60 in less than carload lots, f.o.b. at mill, Wheeling.

Barb Wire.—Domestic demand continues moderate, with a strong market at the 15 cents per 100 pounds advance in price which took effect October 17. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash, 30 days:

To jobbers in carload lots, Painted	$3.40
" " Galvanized	3.55
" in less than carload lots, Painted	3.42½
" " " " " Galvanized	3.57½
To retailers in carload lots, Painted	3.55
" " Galvanized	3.70
" in less than carload lots, Painted	3.65
" " " " " Galvanized	3.80

Chicago, by Telegraph.—The trade had been looking for some time for an advance in prices and were therefore not surprised when they received notice from manufacturers on Tuesday of an addition of 15 cents per hundred pounds on all kinds of Wire. The demand has recently been very good, although possibly not quite so large as the demand for Nails. Prices are now as follows: Single car loads of plain Annealed Wire, $3.10; Painted Barb Wire, $3.70; Galvanized Barb Wire, $3.85. Jobbers quote 10 cents per 100 pounds above these rates for small lots.

St. Louis, by Telegraph.—Prior to the advance this week jobbers were surprised at the extent of the trade in Barb Wire. The advance of 15 cents made this week has not yet had an effect on the volume of business; $3.75 is the present price for Painted, in single cars, and $3.85 for broken cars. Spread on Galvanized is unchanged at 15 cents.

Pittsburgh.—Taking effect on Tuesday, October 17, the American Steel & Wire Company advanced prices on Barb Wire $3 a ton. The tone of the market is strong, but there is only a small amount of Barb Wire moving. We quote at $3.40 for Painted in carload lots to jobbers, and $3.65 in less than carload lots, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh; terms, 30 days, net cash.

Smooth Wire.—The 15-cent advance in the price of Wire Nails and Barb Wire, which took effect October 17, also extends to Smooth Wire. Demand continues large. Quotations are as follows, f.o.b. Pittsburgh; terms, 30 days, net cash:

To jobbers in carload lots	$2.80
To " in less than carload lots	2.82½
To retailers in carload lots	2.95
To " in less than carload lots	3.05

Pittsburgh.—Prices on Smooth Wire have been advanced by the American Steel & Wire Company 15 cents per 100 pounds. The market is strong, and there is a very good demand. A further advance before this month is out is not unlikely. We now quote: To jobbers in carload lots, $2.80; to jobbers in less than carload lots, $2.82½; to retailers in carload lots, $2.95; to retailers in less than carload lots, $3.05, all fo.b. Pittsburgh; terms, net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14 inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, $1.10.

Steel Goods.—An important meeting of the Steel Goods manufacturers is being held in New York. In con-

nection with a good many matters of detail the question of advancing prices is under consideration. There is a disposition on the part of some members to put up prices, but it is understood that to this there is some opposition.

Wrought Iron Nipples.—We give below the revised list on Wrought Iron Nipples, which bears date October 7, and has been adopted by the leading manufacturers of these goods and will doubtless be the standard list. It will be observed that a general revision of prices has been made to correct inequalities which existed in the former list, and making it so that the whole list is subject to the same discount. The price on these goods is represented by the base discount of 65 per cent.:

Wrought Iron Nipples.

List Oct. 7, 1899. Price each.

Threaded Right Hand.

Close.	INCHES. Short.	Long.				Close or Sizes.	Short.	Long.	Extra Long Nipples. 4	5	6	7	8	9	10	11	12 ins.
¾	1½	2	2½	3	3½	⅛	$0.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19
⅞	1½	2	2½	3	3½	¼	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19
1	1½	2	2½	3	3½	⅜	.04	.06	.07	.08	.10	.12	.14	.15	.17	.18	.19
1⅛	1½	2	2½	3	3½	½	.05	.07	.08	.10	.12	.14	.16	.18	.20	.22	.23
1¼	2	2½	3	3½	4	¾	.06	.09	--	.11	.13	.17	.18	.20	.22	.24	.26
1½	2	2½	3	3½	4	1	.08	.13	--	.15	.18	.23	.25	.28	.31	.34	.36
1⅝	2½	3	3½	4	4½	1¼	.11	.17	--	.20	.24	.29	.33	.36	.40	.44	.47
1¾	2½	3	3½	4	4½	1½	.13	.20	--	.25	.29	.36	.40	.45	.50	.54	.59
2	2½	3	3½	4	4½	2	.18	.27	--	.32	.38	.50	.54	.59	.65	.72	.77
2½	3	3½	4	4½	5	2½	.39	.59	--	--	.68	.90	.97	1.06	1.17	1.26	1.35
2½	3	3½	4	4½	5	3	.48	.72	--	--	.85	1.08	1.20	1.33	1.45	1.58	1.70
2¾	4	4½	5	5½	6	3½	.75	1.05	--	--	--	1.30	1.45	1.60	1.75	1.90	2.05
3	4	4½	5	5½	6	4	.85	1.20	--	--	--	1.52	1.69	1.87	2.05	2.22	2.40
3	4	4½	5	5½	6	4½	1.25	1.70	--	--	--	2.25	2.50	2.75	2.95	3.17	3.40
3½	4½	5	5½	6	6½	5	1.55	2.45	--	--	--	2.58	2.83	3.10	3.35	3.60	3.85
3½	4½	5	5½	6	6½	6	1.85	2.90	--	--	--	3.05	3.35	3.70	4.00	4.30	4.65
4	5	6	--	--	--	7	3.20	3.60	--	--	--	4.05	4.45	4.90	5.30	5.75	6.15
4	5	6	--	--	--	8	3.55	4.05	--	--	--	4.55	5.05	5.50	6.00	6.50	7.00
5	6	8	--	--	--	9	5.25	6.50	--	--	--	--	--	7.10	7.75	8.40	9.00
5	6	8	--	--	--	10	6.75	8.25	--	--	--	--	--	8.90	9.70	10.40	11.15
--	--	--	--	--	--	11	--	--	--	--	--	--	--	--	--	--	--
5	6	8	--	--	--	12	8.00	10.00	--	--	--	--	--	10.80	11.75	12.70	13.65

Threaded Right and Left.

¾	1½	2	2½	3	3½	⅛	$0.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27
⅞	1½	2	2½	3	3½	¼	.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27
1	1½	2	2½	3	3½	⅜	.05	.08	.09	.11	.13	.16	.18	.20	.23	.25	.27
1⅛	1½	2	2½	3	3½	½	.07	.10	.11	.13	.16	.18	.21	.24	.27	.29	.31
1¼	2	2½	3	3½	4	¾	.08	.12	--	.15	.17	.23	.25	.27	.29	.32	.35
1½	2	2½	3	3½	4	1	.11	.18	--	.20	.24	.31	.33	.37	.41	.45	.48
1⅝	2½	3	3½	4	4½	1¼	.15	.23	--	.27	.32	.39	.45	.50	.55	.60	.65
1¾	2½	3	3½	4	4½	1½	.18	.27	--	.34	.39	.48	.52	.60	.67	.72	.80
2	2½	3	3½	4	4½	2	.24	.36	--	.43	.51	.67	.72	.80	.87	.96	1.03
2½	3	3½	4	4½	5	2½	.52	.79	--	--	.91	1.20	1.30	1.40	1.55	1.68	1.80
2½	3	3½	4	4½	5	3	.65	.96	--	--	1.13	1.44	1.60	1.77	1.93	2.10	2.27
2¾	4	4½	5	5½	6	3½	1.00	1.40	--	--	--	1.75	1.95	2.15	2.35	2.55	2.75
3	4	4½	5	5½	6	4	1.15	1.60	--	--	--	2.00	2.25	2.50	2.75	3.00	3.25

Add 60 per cent. to above prices for Galvanized Nipples threaded right and left.

Galvanized Threaded Right Hand.

¾	1½	2	2½	3	3½	⅛	$0.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34
⅞	1½	2	2½	3	3½	¼	.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34
1	1½	2	2½	3	3½	⅜	.06	.11	.12	.15	.17	.21	.24	.26	.29	.31	.34
1⅛	1½	2	2½	3	3½	½	.06	.11	.13	.16	.18	.23	.26	.28	.31	.33	.36
1¼	2	2½	3	3½	4	¾	.08	.14	--	.18	.21	.26	.29	.32	.35	.38	.41
1½	2	2½	3	3½	4	1	.11	.19	--	.24	.28	.34	.38	.42	.47	.51	.55
1⅝	2½	3	3½	4	4½	1¼	.17	.29	--	.32	.38	.45	.51	.57	.63	.69	.75
1¾	2½	3	3½	4	4½	1½	.21	.35	--	.39	.46	.55	.63	.70	.77	.84	.91
2	2½	3	3½	4	4½	2	.27	.47	--	.52	.61	.74	.83	.93	1.03	1.13	1.23
2½	3	3½	4	4½	5	2½	.56	.86	--	--	1.00	1.26	1.41	1.56	1.71	1.86	2.01
2½	3	3½	4	4½	5	3	.70	1.10	--	--	1.30	1.60	1.80	2.00	2.20	2.40	2.60
2¾	4	4½	5	5½	6	3½	1.20	1.70	--	--	--	2.10	2.35	2.60	2.85	3.15	3.40
3	4	4½	5	5½	6	4	1.35	1.87	--	--	--	2.30	2.60	2.90	3.20	3.50	3.80
3	4	4½	5	5½	6	4½	1.85	2.60	--	--	--	3.30	3.65	4.05	4.45	4.85	5.25
3½	4½	5	5½	6	6½	5	2.30	3.15	--	--	--	3.75	4.20	4.60	5.00	5.40	5.85
3½	4½	5	5½	6	6½	6	2.80	4.25	--	--	--	4.50	5.00	5.55	6.05	6.60	7.15
4	5	6	--	--	--	7	4.25	4.95	--	--	--	5.65	6.35	7.05	7.75	8.45	9.20
4	5	6	--	--	--	8	5.00	5.80	--	--	--	6.65	7.50	8.35	9.25	10.10	10.95

Wood Goods.—The following are the present quotations on Wood Goods, in accordance with the recent advance made by the National Snath Company:

	Discount. Per cent.
Snaths	45 and 5
Cradles	50

Common Carriage Bolts.— There are indications that some of the leading jobbers who have been in a position to shade manufacturers' prices on Common Carriage Bolts are getting short of goods, and cut prices are less regular than heretofore, and their quotations are represented by a range of from 40 and 10 per cent. discount to 50 and 10 per cent. discount.

Hinge Hasps.—Our attention is called by the manufacturers to the fact that the prices on Hinge Hasps, which are now for single dozen, are sometimes understood by the trade as being for dozen pairs, as they were formerly sold in this way.

Glass.—The situation in the Window Glass market is unchanged. According to reports no agreement has been reached between the American Glass Company and the Glass Workers' Association regarding the wage scale. Demand is light and prices remain unchanged.

Paints and Colors.— *Leads, &c.*— The market for White Lead in Oil continues steady, with no advance in prices, notwithstanding increased values for Linseed Oil. New business continues limited, while demand for deliveries on contract is more active. Quotations are as follows: In lots of less than 500 pounds, 6½ cents; in lots of 500 pounds and over, 6 cents.

In anticipation of higher prices for Paints, owing to the increased cost of the material entering into packages, also of Raw Oil, the trade have been ordering liberally, especially in the West. Orders for these goods from all sections of the country are not now for such large quantities as they have been, but business is considered good in this line.

Oils.— *Linseed Oil.*—Advances in the price of Linseed Oil have been made since our last issue, one on October 13 and another one on the 17th. The advance on the 13th was a uniform one among manufacturers, and brought the price of City Raw to 42 cents per gallon in lots of 5 barrels or more, and 43 cents for lots of less than 5 barrels. The advance of the 17th was not uniform, one company advancing the price 2 cents, and another 4 cents per gallon for City Raw, the lower quotation being 44 to 45 cents, according to quantity, and the higher one 46 to 47 cents on the same basis. State and Western brands are uniformly held at 44 to 45 cents, according to quantity. The conflicting prices on City Raw is the result of a failure among city crushers to agree, which is considered as unfortunate by the trade.

Spirits Turpentine.—Turpentine has advanced during the week and is now held at this point at 53½ cents for Southern and 54 cents per gallon for machine made barrels. Demand is for small lots to fill current requirements, Turpentine at present figures not tempting large buyers. The Southern market is strong with estimated light receipts. There is nothing in the present situation to indicate a decline in prices in the near future. Present prices are above any reached in recent years.

Cordage.—An advance in the price of Manila Rope has been made by manufacturers, present quotations for less than carload lots being on the basis of 14 cents per pound for 7-16-inch and larger. Indications do not point to immediate lower prices, and some members of the trade would not be surprised to see Manila Rope reach a

base price of 16 cents per pound. The advances in the hemp market are responsible for the higher price. Quotations for Rope in carload lots are as follows, with an advance of ¼ cent in less quantity, f.o.b. New York, Boston or Philadelphia:

	Per pound. Cents.
Manila, 7-16 inch and larger	13¾
" ⅜ inch	14¼
" ¼ and 5-16 inch	14¾
Sisal, 7-16 inch and larger	9¾
" ⅜ inch	10¼
" ¼ and 5-16 inch	10¾
" Lath Yarn	9¼

Manila Tarred Rope, 15 thread, is quoted at 12½ cents, as is also Manila Hay Rope, Medium. The price of Jute Rope is 5¾ cents.

Covert Mfg. Company.—A revision in prices has been made by Covert Mfg. Company, West Troy, N. Y., and higher prices are announced on several lines of goods. Their revised quotations are as follows:

	Discount. Per cent.
Breast Chains	35 and 2
Halter Chains	35 and 2
Heel Chains	35 and 2
Rein Chains	35 and 2
Stallion Chains	35 and 2
Sisal Rope Halters and Ties	30 and 2
Hammock Ropes	45 and 2
Derby Harness Snaps	35 and 2
Jockey Harness Snaps	40 and 2
Trojan Harness Snaps	45 and 2
Soldering Irons	20 and 2

New England Hardware Dealers' Association.

October Meeting.

THE New England Hardware Dealers' Association held their regular monthly meeting at the United States Hotel, Boston, October 11. The meeting was largely attended and the association was fortunate in having a number of speakers present whose remarks were very interesting and instructive.

At 5.15 dinner was served, after which the business of the evening was transacted. An amendment to Article 1 of the constitution was proposed by Hiram G. Janvrin, which provides for the admission of delegates from local associations to membership in the parent association. The amendment reads as follows:

AMENDMENT TO ARTICLE I.—SECTION II.

Any local Hardware association in New England having a membership of not more than ten may be represented in this association by one delegate, and an additional delegate for every ten additional members. Such delegate or delegates shall be amenable to all of the laws and entitled to all the privileges of this association, and shall become members of this association on the presentation of proper credentials and the acceptance of the same by this association in the same manner as in the application of personal members.

This, according to the rules, will be voted on at the next meeting.

The association received the application of the Hardware Social Club of Springfield and vicinity for membership, which will probably be acted upon at the November meeting after the adoption of the amendment to the constitution.

The association elected to membership Herbert B. Allen of Boston.

It was voted to have a ladies' night in December, this year, and President Parlin appointed as a committee for that evening Samuel H. Thompson, Byron Pierce and D. Fletcher Barber.

The Springfield Hardware Social Club.

At the conclusion of the business of the meeting the president introduced G. E. Russell, president of the Hardware Social Club of Springfield. Mr. Russell said that the name of the club was chosen with the idea of not making it necessary for everybody to know that their real object was to regulate prices, for at the time when they organized, in June, 1894, it would not have been judicious. Their club now has 32 members, doing business in Springfield, Holyoke, Westfield, Chicopee and East Hampton, Mass. They have meetings once every two months, at which a dinner is served. Mr. Russell said their club was esentially a business club, and was a great benefit to its members. They have a Pricing Committee, who fix the prices at which certain goods shall be sold in each town, and while occasionally some one makes a departure it is generally found to result from some misunderstanding, which is soon settled. Mr. Russell closed by saying that particularly at this time should merchants come together, as it is very important that the market should be watched closely.

President Russell was followed by H. L. Russell, secretary of the same club, who spoke interestingly of the benefit their club had been to the trade.

Wallace P. Cohoe's Address.

The concluding speaker was Wallace P. Cohoe of Harvard University. Mr. Cohoe gave a lecture on "The Function of the Chemist in the Manufacture of Iron." The lecture was practically illustrated and was very instructive and interesting. Mr. Cohoe said:

The aim of the chemist has always been largely utilitarian. True, a large number of chemists are to-day working at problems which in themselves are purely theoretical. Still these problems, although in themselves purely theoretical, have often a very practical bearing, few indeed being confined entirely to the realm of theory.

Let us go back before there was any science of chemistry. Chemistry had its origin in the practice of alchemy. As such it originated in the dark ages. The name itself really means the black art, and the practice of alchemy was looked upon with very doubtful but somewhat longing eyes by the good respectable people of those days. Even then, however, the problem of those crude workers aimed at the practical. What was it? It was twofold. One class worked in the endeavor to turn the baser metals into gold. This was naturally a very attractive field and had many workers in it. Although to-day scientists know that the transmutation of the baser metals into gold is a visionary one, we constantly hear of fakirs who claim to have accomplished it. They are just as reliable as the gold brick man.

The second class of alchemists were trying to make an elixir of life, a mixture which when drunk should render the individual immortal. Bacon believed that a solution of chloride of gold was an elixir of life, and it is said drank much of it himself. It is amusing in this connection to note that this is the substance which plays an important part in the so-called gold cure for the treatment of dipsomania.

Now alchemy was not chemistry, but chemistry grew out of it. The substances which were used in the practice of alchemy came to be known in a definite way and their properties studied, and in the last part of the eighteenth century the science of pure chemistry had its birth. Its progress until to-day has been a steady one. To-day we are dependent upon it on every hand.

The truth of this last statement will be more forcibly seen when I have shown in a brief way—for time does not permit but the very outline of the whole—what part the chemist plays in the history of an Iron or Steel product. Before there is a mine he is there. He examines the ore after it is mined, analyzes the pig after the furnace has done its work, and in large manufacturing establishments examines the finished products in company with the mechanical engineer.

Good Iron was manufactured before such an article as a chemist existed. The chemist has obtained his knowledge in a reverse order in many cases, but to-day he has his knowledge fairly well in hand. Notice I do not say perfectly. The true scientist is modest. The function of the chemist in the Iron industry then is twofold. It is first to apply this knowledge so that the best product shall be obtained, and second to improve on present methods where possible.

What we call Iron is not Iron. It is a mixture of other elements with Iron. The business of the chemist is to control this mixture, producing that which is best suited for the purpose intended. Probably none of you have ever seen pure Iron. It is prepared chemically. Piano Wire is 99.7 per cent. pure, the other 0.3 per cent being carbon. Native Iron occurs most frequently in the form of meteorites.

Now what are the principal forms in which we know Iron.

One form is Pig Iron, or Cast Iron. It is very impure, containing principally carbon, phosphorus, sulphur and

silicon. When cooled suddenly the carbon remains in chemical combination with the Iron, and we have white Cast Iron; when cooled slowly the carbon settles out as graphite and we have gray Cast Iron.

When the carbon, silicon and phosphorus are removed the Iron becomes tough and malleable and its melting point is raised. Then we have Wrought Iron. Wrought Iron generally contains less than 0.6 per cent. of carbon and melts at from 1900 to 2100 degrees.

Now what is Steel? To-day we have so many kinds of Steel that it is very hard to say just what Steel is. Here is a definition, however. In its specific sense Steel is a compound of Iron, possessing or capable of possessing decided hardness, simultaneously with a valuable degree of toughness when hot or when cold, or both. It includes primarily compounds of Iron combined with, say, 0.30 to 2 per cent. of carbon, which can be rendered decidedly soft and tough, or intensely hard, by slow and rapid cooling respectively, and secondarily compounds of Iron with chromium, tungsten, manganese, titanium, nickel and other elements, compounds which, like carbon Steel, possess intense hardness with decided toughness.

Mr. Cohoe then touched upon the elements which enter into Steel and the various kinds of Steel, their constituents and qualities, and said in closing:

When one considers the Iron trade and thinks what a vast industry it is one cannot but think that the old alchemist, if he were to come back to life to-day, would think that his old problem has been accomplished. True, we know to-day that a base metal cannot be transmuted into gold. When we consider, however, that machinery plays the part of hand labor, that in place of the wooden trireme we have the "Oceanic," and in place of the old chariot the fast express, it is seen that Iron has done more for man than all the alchemist's gold could have purchased for him. We to-day do not want an elixir of life. Instead of living longer, thanks to modern civilization and its accompaniments, we see more. We do not live longer but more. Every day brings something new. Think of what the last century has brought us and then wonder what the next will bring. All we can do is to wonder. In the face of all we see happening around us what man is there who can predict "all the wonders that shall be?"

During the evening Robert L. Von Buskirk, basso, accompanied by Miss Helena Jacobs, piano, and Miss D. Emily Lucey, violin, sang several songs that added greatly to the pleasure of the evening.

George Arthur Seaver.

GEORGE ARTHUR SEAVER died in New Orleans, La., October 13, aged 69 years. Mr. Seaver was one of the very few survivors of the past generation of New York City Hardware merchants. He entered the employ of Wolfe & Gillespie, 193 Pearl street, New York, in 1846, and began to travel for them five years later. He has been a commercial traveler almost continuously ever since, and was about starting on a business trip when stricken with heart failure.

Mr. Seaver was born in Philadelphia, the family removing to New York in 1835. One of his school mates was George W. Bruce, well known later as a Hardware merchant. The years 1843-1844 were spent in Boston, the family returning to New York in 1845 and occupying a cottage on Lawrence street, Brooklyn, an apple orchard intervening between the house and Fulton street, which was then a country road.

Going with the house of Wolfe & Gillespie, jobbers of Hardware, in 1846, as already stated, he began business life as an entry clerk. In their vicinity were most of the jobbing interests, the commercial Hardware houses being on Platt street.

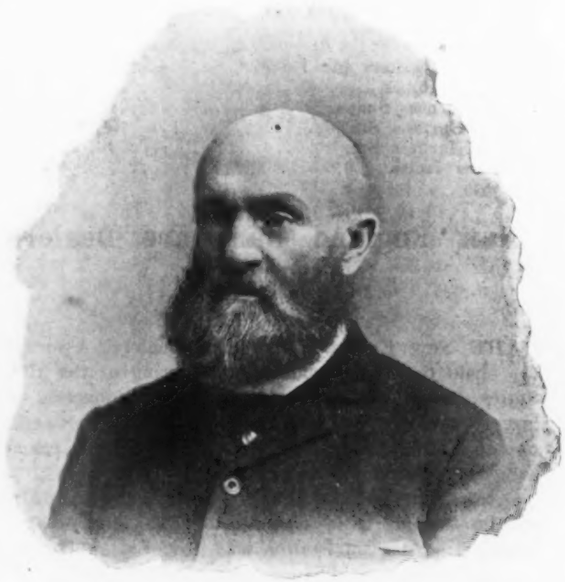
In the dull season he would leave the office and help the boys (two and a porter constituting the working force in the store) paper up Tacks in 1 dozen packages, or reduce larger quantities of other goods to convenient size for the busy season. In 1851 he was sent on a Southern trip to sell goods, the firm making a contract with him for his services for three years, commencing January 1, 1852, as salesman and general clerk, at a salary of $733.33 per annum.

Traveling then required no samples, nor did the jobbers have any illustrated catalogues to guide selections, as the variety of styles was very limited and the wants of a country merchant could be easily explained. In fact, selection was often left to the firm who received the order, and Mr. Seaver used to refer to the fact that customers would often indicate the total value of Hardware desired and leave the assortment to be proportionately made up to that amount.

Speaking of his early Southern experience, Mr. Seaver once said:

"Traveling South in those days was mostly by indifferent coaches over rough roads, and sometimes so boggy as to require the passengers to walk quite a distance, and perhaps 'tote' a rail to help raise the vehicle out of mud holes. On the rivers it was much better, some of the boats supplying luxurious fare with wine, all included in prices of passage—quite in contrast with the country hotels."

In 1856, with two fellow clerks, Richard P. and Charles Bruff (the former then a partner), with James I. Day as capitalist, they commenced business at 44 Warren street, as Bruff, Brother & Seaver, older heads remarking that they had made a mistake in going so far up town. Some of the principal dry goods jobbers were then below Fulton street, while above the Astor House



GEORGE ARTHUR SEAVER

all the diverging streets in that vicinity were in chaos owing to the replacing of dwellings with stores. However, their judgment was justified apparently the following year when their old firm, then Wolfe, Dash & Fisher, removed to within two doors of them.

Mr. Seaver thus referred in later years to his Southern travels and the firm's subsequent history:

"I continued my trips twice a year, as then customary, and to increase our business sought new territory, traveling three winters on horseback in Arkansas, Louisiana and Texas. The only sample I carried in my saddlebags was a Planter's Hoe, made with an oval eye, we being the first to make them of that shape; and as I made it a 'leader,' I was spoken of as 'the man drumming for a New York Hoe house.'

"In 1859 we removed to more commodious quarters further up town—384 and 386 Broadway—having then a well established Southern business, but the war took place and left it all a wreck. Even the fine building was eventually destroyed by fire, the ruins remaining for some time to remind me of what had been.

"On my return from Mexico in 1867, where I was most of the time during the war, I found many of my friends had resumed the jobbing business, and opportunities were offered for me to do so, but I did not take the same rosy view of Southern prospects in its changed condition. Still desiring to adhere to its fortunes or misfortunes, I decided to continue traveling there, visiting its cities only, in the interest of manufacturers."

The following tribute is from Richard P. Bruff, Mr. Seaver's old time associate and the senior partner of their firm:

"He became a partner in the house of Bruff, Brother & Seaver in 1856, and by his business ability and personal magnetism contributed largely to their popularity and success.

"For more than 20 years he had charge of the Southern business of John Russell Cutlery Company, making his headquarters at New Orleans.

"He was a thoroughly trained and able Hardware merchant, possessed rare judgment and superior executive ability, combined with a trustworthiness which admitted of no question. He was a sincere and devout Christian, and had been for many years a communicant of the Protestant Episcopal Church. He made many and lasting friends, and no enemies. He was married in Norfolk, Va., in 1884, and leaves a widow and three children."

"Thou friend to Truth, of soul sincere,
In action faithful and in honor clear;
Who broke no promise, served no private end,
Who gained no title, and who lost no friend."

Letters About Trade.

From Florida.

From a well-known house in Florida we have the following advices in regard to the condition of business, especially as related to the high prices on certain lines of goods:

The present extremely high prices are preventing many contemplated improvements, and are therefore curtailing our sales. A great many people believe that the present prices cannot hold, and therefore will buy only what they are compelled to.

Another View.

The following letter is from a gentleman in touch with the trade in the West, and takes, it will be observed, a somewhat different view of the situation, expressing the opinion that high prices are likely to prevail for some time. The letter refers also, it will be seen, to the irregularity of prices, especially among the jobbing trade, and also the disposition on the part of some of the jobbers to lay in large stocks in anticipation of the demand next year:

So far as my observation has gone, I would say that it is yet too early to determine just what effect advancing prices are having on consumption, because manufacturers, as a rule, have considered it a policy to be very lenient in the matter of entering up orders at old prices for delivery through the current year, thus enabling the jobbers to be in the position of underselling current factory prices. Competition among jobbers makes them timid about asking prices based on the advances made by factories, and thus the retailer is getting a corresponding benefit, weeks, and I may say months, after advances have taken place. The same timidity runs clear through to the retailer in selling the consumer.

During my recent trip I have heard several dictations of letters to jobbers' travelers, something like this:

We have just received notice of another advance of 15 per cent. in Square Circles, and it looks as though further advances were to take place, but owing to our having a sufficient stock at old prices and a contract with the factory at the same rates, which will carry us some time yet, we are willing that you should continue to sell Square Circles at your old selling price during your present trip. This ought to enable you to please your customers and to secure orders for other goods. Do not urge them to buy too largely of Square Circles, simply let them see the good turn you can do them, and let them name the quantity without any suggestion from you.

All old contracts at old prices are bound to run out on or before the close of this year, as a rule, and everybody will have to advance prices for next spring's business.

It would seem that among the smaller jobbers there is a lack of comprehension on the part of many of the meaning of all Iron producing mills being sold up for nearly a year ahead, and among such houses one can see a feeling that after manufacturers have filled their old contract orders in some way they are going to slump back toward the old level to get a new supply of orders rather than to stick to the advances already quoted. Merchants who take that view of the situation are bound to be painfully fooled. It is easily seen that the big houses are preparing themselves for the inevitable. They not only foresee high prices, but a lack of capacity of manufacturers to meet the demand which they believe the future has in store, and so the big houses are leasing surprisingly large storage room, and are pressing manufacturers at this unusually busy time of year with the jobber to ship goods which they will not need until later on, and in some cases not until next spring and summer, so that they may have goods on hand to ship promptly when their less fortunate or more short sighted competitors will be suffering for want of goods.

The National Hardware Association.

Arrangements are progressing very satisfactorily for the entertainment of visitors and members at the annual convention of the National Hardware Association, to be held in Pittsburgh next month. The Entertainment Committee is hard at work and has already made a number of arrangements looking to the pleasure and entertainment to be afforded the guests. The Entertainment Committee is composed of W. C. Reitz, chairman, representing the Bindley Hardware Company; A. J. Bihler of the James C. Lindsay Hardware Company; John D. Cherry of Wolff, Lane & Co.; R. M. Repp of Logan-Gregg Hardware Company, and Herman Lautner of Lautner Hardware Company. This convention promises to be not only the largest, but probably the most pleasant and profitable that has yet been held by the members of this important organization.

Trade Items.

J. M. LITCHFELD has opened at 105 Beekman street, corner of Pearl, New York, a handsome salesroom in the interest of the Taylor & Boggis Foundry Company, Cleveland, Ohio, for the general display of all kinds of Stoves for oil, gasoline, gas and coal, and kindred Hardware Specialties. This will also be Mr. Litchfield's headquarters for the well-known Game Oil and Filter Faucets. Mr. Litchfield hopes that all of his customers and other interested parties will call on him when in the city, the facilities of his office being extended to them.

WHEN the recent war with Spain was approaching dispatches from abroad told how the United States were purchasing various articles in foreign countries and hurrying them onto the ocean before war was actually declared and the foreign governments interested forced to declare their neutrality and prevent such purchases and shipments. Now, with a prospective war between Great Britain and the Boer Republic, this story is repeated, but it is the American manufacturers who are reaping the harvest. One incident of this kind occurred at Niagara Falls on Friday, October 13. It is understood that for some time the British Government has been purchasing mules in this country for shipment to South Africa. Many of these mules are at New Orleans ready for loading aboard ship. On the morning above referred to the Oneida Community of Niagara Falls, N. Y., received a telegram asking their price on 200 dozen Steel Wire Halter Chains. Immediate reply was made, and late in the afternoon the order for the Chains was received by the Oneida people. All of the factory hands it was possible to use were set to work on the order, and between 10 and 11 o'clock that night the Chains were on their way to New Orleans by express. Each Chain weighed 1 pound, and, therefore, there were 2400 pounds of the goods. The length of each Chain was 4½ feet and they were made under a patent purchased from the Garland Chain Company of Pittsburgh, Pa. The prompt manner in which the order was filled illustrates the facilities of the Oneida Community.

ATTENTION is called to the page advertisement in this issue of Reade & Bowler, Cleveland and Pittsburgh, who offer for sale the complete works of the Porter Mfg. Company, Syracuse, N. Y.

Trade Winning Methods.

This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.

A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

THE IRON AGE ADVERTISING PRIZE COMPETITION No. 2.

In addition to the prize winners in Advertising Competition No. 2—H. C. Wiseman, Springfield, Ohio; Evenson Bros., St. Peter, Minn; E. W. Peterson, with E. P. Laugesen, Florence, Wis.—the committee refer to the advertisements submitted by the following persons as entitled to

Honorable Mention

on account of the effectiveness, originality and general merit of the advertisements submitted by them:

Clarence C. Archibald, with Barber & Ross, Washington, D. C.
L. A. Bawer, with Morehouse & Wells Company, Decatur, Ill.
Buck & Gobel, Groton, N. Y.
A. Catlin, Montague, Mich.
W. Cotgrave Betts, Philadelphia, Pa.
Wm. G. Close, W. H. Close Hardware Company, Hibbing, Minn.
C. M. Doxsee, Algona, Iowa.
M. Falkenhainer Farm Machinery Company, St. Louis, Mo.
Arthur D. Ferris, Ferris & Son, South Norwalk, Conn.
H. S. Fish, Salisbury, Md.
H. H. Fleming, with D. H. Smith Hardware Company, Sedalia, Mo.
Fowle & Hastings, Wyandotte, Mich.
H. H. Gortner of the Hawks Hardware Company, Goshen, Ind.
L. W. Gumby, Salisbury, Md.
R. W. Herbster, B. K. Herbster & Son, Prospect, Ohio.
Chas. F. Hoffman, with Louis Hoffman Hardware Company, Vicksburg, Miss.
A. D. Jones, Springfield, N. Y.
Ernest L. Jones, with Laven P. Jones, Haverstraw, N. Y.
John H. Jones, with Shoudy Bros., Atlantic, Iowa.
M. L. Langford, Yazoo City, Miss.
J. Cameron McGregor, Caledonia, Ont.
T. W. Rogers, Lamont, Iowa.
John T. Sanford, Rochester, N. Y.
M. M. Spalding, Spalding & Graves Hardware Company, Towanda, Pa.
Swank Hardware Company, Johnstown, Pa.
C. A. Theobald, Buffalo, N. Y.
P. J. Thompson, Stambaugh-Thompson Company, Youngstown, Ohio.
Thomas N. Varick, John B. Varick Company, Manchester, N. H.
Adolph W. Walter, with Byron E. Walter, South Milwaukee, Wis.
Walter Weed, Weed & Co., Buffalo, N. Y.
Jas. F. Wright, Worthington, Ohio.

ADVERTISING FOR PROFIT.—No. 6.

BY H. C. W.

Discounting Bills.—It is said a man can perpetuate his memory for the longest possible time after death—by dying in debt. And yet does it ever occur to most of us that one of the cleverest, best and most lasting advertisements that can be given a business arises from the discounting one's bills? It is known by everybody interested in very short order—by the purchaser of goods as well as by those who have goods to sell you. It is known that such houses are able to buy goods, as a rule, on a closer margin than does the house that pays when it can, or when it wants to; and it is conceded that the merchant who spot cashes every invoice that offers 2 per cent. will sell goods closer than his neighbor.

Paying Local Bills.—No one thing in your own city so much favors you—brings you so many friends—in addition to the above; as paying promptly and with a smile everything that has to be paid. The man who is so gifted and so built that he will cheerfully pay every debt, every subscription, contribution or promised obligation, smiling the while and asking that you come again, is slowly (and not so slowly either) and surely doing some of his very best work along the line of advertising his business to the world. Such men we regret to say are rare, rather than otherwise, and are sufficiently spoken of and talked about—to make the matter a principle—if not from choice then from policy.

Practical Suggestions.

Getting Back to More Usual Lines of advertising there are methods and ways of using every active portion of one's business, so that it may be better known, be continually talked of and grow steadily in spite of seeming negligence as to sheets of paper and spread eagle expense, and with many of these ways practically no expense need attach.

One of the best, perhaps, is the medium of

The Office.

Just Here we try to make it count for a great deal. We never let a day go by, on which our bookkeeper, in getting out his invoices to various factories and personages, does not insert some readable slip or folder concerning a specialty, and furnished gratis for the purpose by makers of the goods. Another day all invoices—and they are many in a town of our class—have stamped across them with rubber stamp for the purpose this:

Twist Drills in Stock.

When we put in a stock of these some years ago we sold some $70 to $80 worth the first year, but with the above and other methods have increased the sales until they now reach nearly $2000 yearly. The following:

WE SELL.....

Hoyt's Leather Belt

BEST IN THE WORLD.

used in the same way, and in connection with business letters and other matter has more than doubled what was already a fair trade in the business. The same method has been taken up where other lines were slow and where something of the kind is needed as a constant reminder. In opposition to a good concern we some time ago placed an agency for Lard Oils in barrel lots or shipments, knowing at the time it would be a long

pull and up hill work to establish a trade, by constant reminders such as this

LARD OIL.

Date 10/12th

Number 1 38¢

Extra No. 1 Winter Strained 42¢

kept up, and used continually and mostly from the office, we have been more than satisfied with the growth of the business, and all of it at a nominal expense for rubber stamps.

Hard Work,

And Close Watching as to detail is required if these "little things" are always attended to, but it can be done, and before closing this series, in one of the articles, I want to say something as regards the proper personage to intrust with this sort of work, and as to whether it necessarily belongs to the proprietor or not.

Another Experience.

Some years ago we were selling as a usual quota possibly 15 to 20 barrels of Linseed Oil yearly, and felt it was not enough. Through one of the makers we made an arrangement for warehousing it, and began a campaign of printed postal cards twice a week—like this:

WARE-HOUSERS
OF
PURE LINSEED OIL.

We quote you to day. Lowest mill price.

RAW.....38c.
KETTLE BOILED.....40c.

Price guaranteed. Quality guaranteed.

which proved highly satisfactory, this thing alone, in connection with our store talk, increasing our sales until last year they reached for us 250 barrels all told.

We occasionally get out postal cards similar to inclosed, and send to small local and out of town dealers, the results helping us largely in quantity buying:

Springfield, Ohio,.....1897.

GENTLEMEN:—

Kindly give us your orders for "Black Jack" Stove Polish.
The largest package and best polish on earth at 75 cents per dozen.
Give us your orders for cheap Whips—see stock and prices.
And for Tarred Corn Twine at lowest mill prices.
Let us job you your Hand Forged Corn Knives.
We sell you Wrapping Twine less than anybody.
Carry the best line of cheap Pocket Cutlery in the city.
Keep your money at home—with prices as low as any.
Come and see us.

THE SPRINGFIELD HARDWARE CO.

They do not vary much from the above, only that we find it pays much better to quote prices, and do not hesitate to do so on all occasions.

HARDWARE MERCHANTS' ADVERTISING CUTS.

Among late additions to our line of cuts intended for the use of Hardware merchants in their local advertising, are those shown herewith, Nos. 51, 52 and 53. They relate, it will be observed, to Guns, Bird Cages and Pocket Cutlery respectively, and are offered at 50 cents each.

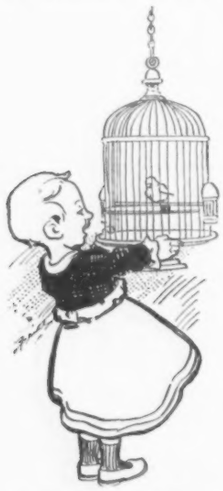
No. 51.—Price, 50 Cents.

No. 52.—Price, 50 Cents.

A circular showing many of the cuts we are prepared

to supply has recently been issued and will be forwarded on application.

The cuts shown herewith, and any others in the series,



No. 53.—Price, 50 Cents.

will be sent postpaid on receipt of price by David Williams Company, 232-238 William street, New York.

Parcels Post to Germany.

A PARCELS POST CONVENTION between the United States and the German Empire became effective October 1, and promises to be of great value to merchants and individuals in this country. It provides for the establishment of a parcels post system of exchanges between the two countries, relating only to mail matter, not however interfering with existing arrangements under the Universal Postal Convention.

This agreement admits to the mails articles of merchandise and mail matter—except letters, postal cards and written matter of all kinds—that are admitted under any conditions to the domestic mails of the country of origin, except that no packet must exceed 11 pounds in weight, nor the following dimensions: Greatest length in any direction, 3 feet 6 inches; greatest length and girth combined, 6 feet, and must be so wrapped or inclosed as to permit their contents to be easily examined by customs officers and by postmasters duly authorized to do so.

Nothing of the nature of personal correspondence can accompany, be written on or inclosed with any parcel.

No parcel may contain parcels intended for delivery at an address other than that borne by the parcel itself.

Packages under this convention are subject in the country of destination to all customs duties and all customs regulations in force in that country for the protection of its customs revenues, and to the following rates of postage, which shall in all cases be fully prepaid—viz.: In the United States, for a parcel not exceeding 1 pound in weight, 12 cents, and for each additional pound or fraction of a pound, 12 cents. The sender of each package must make a customs declaration upon a special form provided for the purpose.

Packages will be delivered to addressees in this country of destination free of charge for postage, but the customs duties will be collected on delivery, and the country of destination may collect from the addressees for interior service and delivery a sum not exceeding 5 cents in the United States, or 20 pfennigs, in the German Empire, on each single parcel of whatever weight. Simple forms for filling out by senders, giving a description of parcel, contents, value and amount of customs charges, are provided by the post office department.

The advantages of this method of sending samples, &c., are referred to in the following letter from a gentleman in Hamburg identified with American interests:

It may not be generally known among American manufacturers that they can now send packages containing samples or merchandise up to 5 kilos (about 11 pounds American) in weight by the United States mail from New York to Germany, and it would therefore be desirable to call the attention of your subscribers to this fact, since it means a saving of a great deal of annoyance, and of money, to both the sender and the receiver of the package.

Heretofore the sending of small packages from the United States to Germany, and vice versa, has not alone been very troublesome and expensive, but has given a chance to the local agents of the American express companies to add a number of charges on prepaid packages, which frequently amounted to considerably more than the expressage itself. This has caused receivers of packages to decline to accept them, and it has usually led to delay and complaints.

It would therefore be well for manufacturers and exporters to know that hereafter the United States mail is the safest and the cheapest way to send a 10-pound package to Germany.

Everybody knows that to introduce a new article it is important that samples should be received cheaply and promptly, and there should not be any controversies at the start, and therefore the importance of the new measure and the advantages of same cannot be overestimated.

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J. W. Black.

J. W. BLACK of Burhans & Black Company, Syracuse, the recently elected president of the New York State Association of Hardware Jobbers, began his career in the Hardware business at the age of 17, being employed at that time by Thomas Merriam, later Merriam & Gregory. After seven years' service with that concern, Merriam & Gregory vacated the store they had occupied, and Mr. Black, with J. D. Wagner, a nephew of Senator Wagner of the Wagner Palace Car Company, entered into a copartnership, renting and occupying the old stand of Merriam & Gregory. After a business experience of eight months, H. N. Burhans, who was in business at the time, became one of the firm, and they have continued their connection ever since.

During this period Burhans & Black Company have purchased the firms of Everson & Co., Parshall & Searle Company, D. D. Gregory, and have absorbed the firm of P. J. Mack & Co. The business is now incorporated, H. N. Burhans being president and treasurer and J. W. Black vice-president and secretary. Some conception of their business is suggested by the maxim "If it's Hardware, we have it," which appears conspicuously on their stationery. The company do a wholesale and retail business, mainly wholesale, and cover a large portion of New York State. They occupy a store 300 x 36 feet, five stories high.

J. W. Black

President New York State Association of Hardware Jobbers.

Mr. Black is referred to as an up-to-date merchant, enterprising and progressive, shrewd, sagacious and a thorough gentleman. As illustrating Mr. Black's sagacity, a salesman, recalling an episode in the career of the Nail combination a few years ago, referred to the fact that when dissolution was known to be assured, and only something like a month of the pool's existence remained, Mr. Black coolly purchased several thousand kegs of Nails, on the theory that almost every concern would run down their stock and there would for a time be a shortage for immediate delivery. This proved to be the case, and the venture was successful.

In view of Mr. Black's position and character and the esteem in which he is held, his selection as president of the association is recognized as an eminently fitting one, and the continuance of the success and usefulness of the association may be anticipated under his administration.

Requests for Catalogues, &c.

BOECHER & KNAPP is the style of a new firm just starting in the Hardware and plumbing business at Spring Valley, N. Y. They request catalogues and trade literature pertaining to these lines from manufacturers and jobbers.

Frank S. Dean has opened a new store at Amsterdam, N. Y., carrying a line of general Hardware, Stoves, Iron and Steel and Carriage Hardware. His store is 115 feet long by 24½ feet wide, with basement. Mr. Dean has had 20 years' experience in this line, having been formerly connected with Larrabee & Barnes, now J. E. Larrabee, and for the past 15 years with De Graff & Kline. He will be pleased to receive catalogues, discount sheets, &c.

The Nelsonville Hardware Company, Nelsonville, Ohio, have been incorporated, with a capital of $8000, by W. A. Carpenter, H. Furmis, J. E. Carpenter, L. F. Carpenter and I. S. Carpenter. They are retailers of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods and Furniture, and advise us that they would appreciate copies of catalogues, &c., from the trade.

Meeting of Woven Wire Fence Manufacturers.

REPRESENTATIVES of 28 Woven Wire Fence factories attended the regular semi-annual meeting of the National Association of Woven Wire Fence Manufacturers at the Great Northern Hotel, Chicago, on Tuesday and Wednesday, 10th and 11th inst. This was the first regular meeting of the association since the organization was effected May 25. The object of the association, as reported at the time the organization was perfected, is "to advance the interests of Wire Fence manufacturers by all lawful and proper methods." E. F. Shellaberger, president of the De Kalb Fence Company of De Kalb, Ill., is president of the association, and E. E. Kilmer, president of the Kilmer Wire Mfg. Company, Chicago, is secretary. Secretary Kilmer stated that the association took no action with regard to prices, but that the price of Wire Fence must of necessity follow the price of Wire, which, as all are aware, has advanced nearly 100 per cent. The advances, he said, would be made individually and not by concerted action of the association.

Price-Lists, Circulars, &c.

A. J. JORDAN CUTLERY COMPANY, St. Louis, Mo.: Illustrated catalogue and price-list of fine Cutlery, Solid Silverware, Silver Plated Ware and American Cut Glass, of which they are manufacturers, wholesalers, importers and retailers. The catalogue comprises over 100 copiously illustrated pages.

STATE LINE TALC COMPANY, Chattanooga, Tenn.: Circular and price-list relating to D. M. Steward's patent Acetylene Burners.

NORTH CAROLINA MICA COMPANY, Boston and Chicago: Catalogue and price-list of Mica Specialties, such as Kant Krack Chimneys, Canopies for lamp chimneys and gas globes, Candle Shade Protectors, Reflectors, &c.

THOMAS MURPHY, Angola, Ind.: Price-list of select young Hickory Handles.

THE AVERY STAMPING COMPANY, Cleveland, Ohio: Catalogue illustrating Never-Break Sled Skates.

Tables Comparing Weight of Black and Smokeless Powders.

IDEAL MFG. COMPANY, New Haven, Conn., have issued a circular, presenting two tables comparing weight of Black and various Smokeless Powders. These tables are referred to as the result of considerable labor on the part of the company, and have been submitted to each of the different Powder manufacturers, who have signified their approval of them, declaring in a certified statement that they have tested the Ideal Measures, models 1899, with their Powders, and find when the measures are set in accordance with these tables they are correct for their various Powders, and recommending these measures and tables. One table compares the weight (by grains) of bulk measure of Black Powder with the same bulk measure of Smokeless Powders. The other table compares the weight (in grains) of drachm (measure) of Black Powder with the same measure of Smokeless Powders. The tables do not compare the relative strength of the Powders, the company suggesting that such information be obtained from the manufacturers.

Among the Hardware Trade.

August Warken has sold out his business at La Grange, Texas, to J. W. Holloway.

The Hardware store of Cline Bros., Logansport, Ind., was destroyed by fire a short time since, and five men were injured by the explosion of a keg of powder. The firm are closing out their damaged stock, and ordering new goods, and will soon be ready for business again in a new building.

W. R. Daskam & Co., Houghton, Mich., are erecting a new building for their business.

Tischart & Mosack, Forty-seventh street near Halsted, Chicago, Ill., have dissolved partnership in the Hardware business, Mr. Mosack retiring. L. P. Tischart will continue under the style of Tischart Hardware Company.

The Edward Cavanagh Company, 2547-2553 Notre Dame street, Montreal, Canada, have made considerable addition to their store room during the present year by putting up a building on unoccupied ground next their old premises. The new part is taken up with a complete sample room of all sorts of Mechanics' Tools and Sporting Goods, of which they intend making a specialty. Trade in all branches of their business, which includes Builders' and General Hardware, Stoves, Paints, Oils and Coal, has been exceptionally good during the year.

R. S. Patrick, a member of the firm of Patrick & Luthe Company, wholesalers of Hardware, at Des Moines, Iowa, has purchased the stock of Geo. P. Cook, at Nevada. This is said to be the oldest established Hardware business in Story County, having been started by T. E. Alderman in 1854, and operated at the same stand ever since. The store will be conducted under the style of R. S. Patrick & Co. The stock has been more than doubled, and it is intended to refit the store about January 1 next.

Henry & Clayton have succeeded Clayton Hardware Company, Central City, Neb.

The store of Humphrey & Vanston, Mesquite, Texas, was robbed on the 1st inst. of a quantity of Cutlery.

Johnson & Billingsley is the style of a new firm at Paris, Texas. They are retailers of Shelf Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

The Tennessee Hardware Company, Covington, Tenn., have been incorporated with a capital stock of $5000. The company are retailers of Hardware, Stoves, Implements, &c., and expect to move into new quarters on January 1 next.

The Hardware store of C. H. Goss, St. Johnsbury, Vt., was badly damaged by fire and water a short time since. Mr. Goss was insured for $4200.

Andrew Kuster, Edon, Ohio, has sold his business to Geo. M. Swaney, who is continuing under his own name.

Geo. Appling has purchased the Hardware business of G. M. Saddler, Louise, Texas, and to it has added a general line of merchandise.

F. J. Kovar, recently elected county treasurer, has disposed of his business in Colby, Kan., to Landreth & Foote, who are continuing at the old stand.

Robbins & Riley, Keokuk, Iowa, have been succeeded by Huckins Bros. & Martin.

Joel W. Luck has bought the business of W. B. Palmer & Bro., Salisbury, Mo.

Halyard Hardware Company, wholesale and retail, Joplin, Mo., have lately erected a warehouse, and contemplate making other additions to their facilities in the near future.

T. L. Hollingsworth and Temple Hardware Company, Temple, Texas, have consolidated their interests under the former style. The business is both wholesale and retail and Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Paints, Oils, Queensware, &c., are handled. The frontage of the establishment is 60 feet, and the floor space aggregates more than 20,000 square feet.

J. Mintorn has sold out his business in Dickens, Texas, to Samuel G. Flook, who will continue at the old stand.

F. G. Pollock has purchased the Hardware store of Chas. R. Dodge, at Vandalia, Mich.

Norris, Lockett & White are successors to Bank Hardware Company, at Henderson, Ky.

Charles T. Woodward has purchased the interest of E. C. Barbour, formerly treasurer of the S. S. Woodward Hardware Company, Carlinville, Ill. Mr. Barbour will remove to Oklahoma.

Maurice Walton Hardware Company, Augusta, Ga., have just moved into new quarters with 10,000 square feet of floor space. The establishment is equipped with new and improved fixtures throughout. Besides doing a retail business they give special attention to jobbing, and carry Hardware, Agricultural Implements, Tinware, Scales, Harness, &c.

Matt. Stewart & Co., wholesale and retail dealers in Hardware, at Memphis, Tenn., owing to their growing business and the inadequacy of their former quarters on Second street, have removed to the three-story building, 234 Main street, where they have a spacious and neatly arranged store. The firm have been in business since 1887, and consist of William, James and "Big Matt" Stewart, who have built up a large and increasing trade.

E. E. Flippen has purchased the wholesale and retail stock of the J. P. Smith Hardware Company, Waco, Texas, and will continue under his own name.

The store of Manchester & Carlstrom, at Burnside, Iowa, was robbed a short time since.

Strong Hardware Company of Strong, Maine, have opened a branch store at Phillips, Maine, under the management of Fred. C. Bangs and Harry E. Bell. It will be conducted under the style of Bangs & Bell. A retail business will be done in Shelf and Heavy Hardware, Stoves and Tinware, Farm Implements, Sporting Goods, Bicycles, &c.

J. G. Romack has succeeded Price & Romack in the Hardware business at Sharpsville, Ind.

M. F. Koenig has succeeded the Barber-Koenig Mfg. Company, Hazleton, Pa., and will continue the manufacturing and retail business under his own name. About a year and a half ago a retail store was opened on the main street of the city, and lately the stock was removed to a more desirable location, where a general line of Shelf Hardware, Sporting and Athletic Goods, &c., is carried. The front part of the new store has been fitted up with the Warren shelving, and the balance of the room with the Koch adjustable store fit-

tings. Gradually the line of Shelf Hardware carried will be increased. Mr. Koenig will also continue the manufacture of the Excelsior Baking and Roasting Pans, the Common Sense Broom Holders and a line of Wire Garment Hangers for the Hardware, clothing and laundry trade.

Dickinson & Leonard, Lebanon, Va., have sold out to H. H. Dickinson & Son.

Lowell Hardware Company, Janesville, Wis., have purchased the stock formerly carried by John P. Coffey, at Whitewater.

Londigan Bros., Decatur, Ark., have sold out their store to S. P. Londigan, who will continue at the old stand.

The Hardware establishment of A. S. Raymer, South Omaha, Neb., was robbed of $100 worth of goods a short time since.

Colliver & Darnall are successors to Colliver & Huffman, at Bainbridge, Ind.

Fifty-one dollars' worth of goods were stolen from the store of Phillips Bros., Deer Creek, Ill., several weeks since.

Kerkhaf & Wituliet have succeeded J. B. Van Ort in the Hardware, Stove and Sporting Goods business at Holland, Mich.

R. A. Ward, Searcy, Ark., has sold out to J. E. Lighth & Co.

E. H. Bagley has opened up a new store at Lydonville, Vt., with Geo. S. Hickey as manager. The stock carried consists of Shelf Hardware, Stoves and Tinware.

Emmons-Hawkins Hardware Company, Huntington, N. Y., have been incorporated with a capital of $60,000, the incorporators being C. D. Emmons, J. L. Hawkins, E. V. Carter, D. W. Emmons and E. S. Emmons. The business is principally wholesale, the stock comprising Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c. The company are also putting in a full line of Natural Gas Stoves, Heaters, Ranges, &c. They also conduct a plumbing department.

Joseph C. Bevis has purchased the wholesale and retail Hardware business of Bevis Bros., Harrison, Ohio.

Tomlinson & Turner have succeeded R. H. Tomlinson, at Mooreville, N. C. They have nearly doubled the stock, and will add Buggies, Wagons, Saddles, Harness, Mowing Machines, &c., to their present assortment of Hardware, Stoves and Tinware.

Kelley Bros. have succeeded D. W. Dugan, at Diamond, Mo.

W. R. Daskam & Co. opened up in the Hardware, Plumbing and Tinsmithing business, at Houghton, Mich., on the 18th ult.

J. M. Black has bought the stock of Hardware, Tinware, &c., of F. N. Lee, at Harlem, N. D.

Kech & Young have succeeded Gilham & Sons, at Toronto, Kan. The new proprietors will enlarge the stock thus acquired.

Tienken & Case are successors to Case & Cook, at Rochester, Mich. About $2000 worth of goods have been added to the old stock.

J. M. Miner is successor to Sands & Miner, at Thornburg, Iowa, dealers in Hardware, Stoves, Buggies, &c.

Leech & White, Richland, Iowa, have sold out to A. B. Williams, who subsequently closed out the stock.

John B. Holley has sold his interest in the H. S. Bettes Hardware Company, Paris, Texas, to Messrs. Bettes and Dickinson.

J. E. Clark & Co., Osawatomie, Kan., have made improvements in their store, and are building a two-story warehouse, 26 x 70 feet.

Laughener & Co. have moved into their new store at Caroapolis, Pa. Heller's steel shelf boxes are used throughout the store, all oak fronts, antique finish.

Miscellaneous Notes.

Baldwin Gas Lamp.

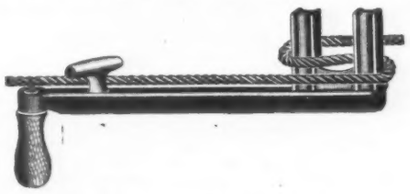
In describing the Baldwin gas lamp for bicycles last week we referred to the burner as a lava tip, projecting a round flame horizontally. It has been decided to use instead a burner of hardened brass, so drilled that with almost perfect combustion there is no tendency to carbonize. Aside from this point the new burner so connects with the reflector that it holds the latter firmly to the body of the lamp by means of a flange on the burner which is turned from solid hardened brass. This is referred to as a decided improvement over the former method of holding the tip in with white lead and screwing the back of the reflector to the body of the lamp, there being too little metal for the purpose at the back of the reflector to hold if the lamp was ill used. The lamp is put on the market by Hermann Boker & Co., 101 and 103 Duane street, New York.

Reliable and Peerless Cork Screws.

Smith & Hemenway Company, 296 Broadway, New York, have now ready for the trade the Reliable and Peerless compound lever cork screws, which were formerly handled by the Maltby, Henley Company, whose hardware business Smith & Hemenway Company recently bought. As now made the Peerless will have a solid stem, which insures a pulling of the cork perfectly straight and without fracturing the neck of the bottle, it being as now made practically a new article. They are put up singly in a nice package.

Little Wonder Clothes Line Tightener.

The accompanying cut represents a clothes line tightener, made of iron with wood handles, and taking up but 6 inches of space. It is designed to tighten clothes lines after being put up, and is left in position until after the clothes are taken down. The manufacturer remarks that the tightener has leverage enough to break

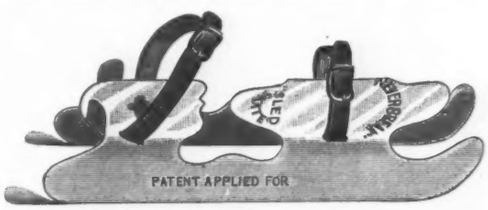


Little Wonder Clothes Line Tightener.

an ordinary line with ease, and that it works equally as well on wire lines as on rope, also that repeated turns of the tightener will take up any amount of slack in a line. The tightener is designed for use without the ordinary poles or props. It is designed to retail at 10 cents, and is referred to as being cheap, strong and very durable. The tightener is manufactured by J. S. Bolton, Moline, Ill.

Never-Break Sled Skates.

The accompanying cut represents sled skates, put on the market by the Avery Stamping Company, Cleveland, Ohio. The skates are made especially for the use of younger children whose ankles are not strong enough to stand up on skates with one runner, the ob-



Never-Break Sled Skates.

ject being to obviate the danger of spraining the children's ankles. It is remarked that even older persons can use these skates, thus enabling a multitude of people heretofore unable to skate to enjoy this winter sport. The skates are made at present in four sizes—viz., 6, 7, 8 and 9 inches long, nicely plated, complete with straps, packed one pair in a box. Patents are pending, and trade-marks have been allowed in this country and abroad on "Never-Break" and "Sled Skates."

Never-Break Post Hole Diggers.

The Avery Stamping Company, Cleveland, Ohio, are putting on the market the post hole digger herewith illustrated. The diggers are referred to as being made from high carbon steel, and as free from interior or exterior projections which would hold the soil being

Never-Break Post Hole Diggers.

dug, insuring a clean cut into the ground and also clean delivery of soil. The handles are of strong ash, and of large size to give a sure grip. There is an arrangement on the digger to keep the handles from coming together, thereby preventing the bruising or cutting of the operator's knuckles. The manufacturers refer to the comparative rapidity with which the tool digs, and state that they are especially adapted to use on railroads and by fence builders and farmers; also that the diggers will work in sand, gravel or clay soil.

Foot Hold Dust Pan.

The cut herewith shown is of a foot hold dust pan put on the market by Keen & Hagerty Mfg. Company,

Foot Hold Dust Pan.

Baltimore, Md. In use the left foot is placed on the foot hold; stepping naturally on it causes the front or edge of the pan to press closely to the floor. To remove the pan from place to place, at the same time taking up the dirt, the broom is placed on the front of the pan and the pan is lifted with the toe. The broom steadies the pan and prevents the dirt falling out.

The Bown Cycle Rack.

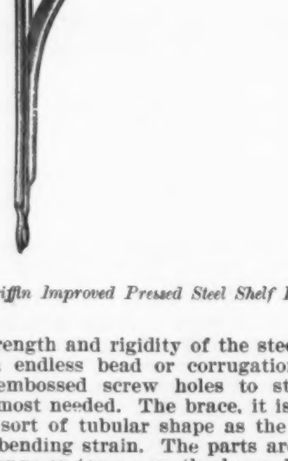
A bicycle rack of convenient and attractive form is being manufactured by the Bown Machine Works, Battle Creek, Mich. An illustration is given herewith. It is made of steel, strongly riveted and bolted, but can be quickly taken apart and packed in small space for shipping. It is mainly designed for the use of merchants,

The Bown Cycle Rack.

to be placed in front of their stores for the accommodation of customers. Above the rack is a signboard, 15 x 24 inches, on which a merchant's name can be painted.

The Griffin Improved Pressed Steel Shelf Bracket.

The Griffin Mfg. Company, Allegheny, Pa., are offering the steel pressed shelf bracket here shown. The chief aim in designing the bracket was to obtain the



The Griffin Improved Pressed Steel Shelf Bracket.

maximum strength and rigidity of the steel. The angle piece has an endless bead or corrugation around the edge, with embossed screw holes to strengthen the piece where most needed. The brace, it is explained, is formed in a sort of tubular shape as the best form to withstand a bending strain. The parts are fastened together by prongs or tenons on the brace being inserted into slots in the angle and turned over to make a double clinch joint. This arrangement, the manufacturers state, makes a very strong and durable fastening, one that will not pull out or become loosened. The brackets are made in all the usual sizes from 4 x 5 to 16 x 18 inches, finished in black enamel, and are packed for the trade in strong cardboard boxes of one-half and one dozen each, according to size.

Current Hardware Prices.

REVISED OCTOBER 17, 1899.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Cut Prices.—*In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.*

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, ₩ doz. $3.00....33⅓@33⅓&10%
North's.....10%
Zimmerman's—See *Fasteners, Blind.*

Window Stop—

Ives' Patent.....25&5%
Taplin's Perfection.....50%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....₩ ℔ 7¼@7¾¢
Hay-Budden, Wrought.....8¼@8¾¢
Horseshoe brand, Wrought.....9¼@9¾¢
Samson.....₩ ℔ 7¼@8¢
Trenton, Wrought.....₩ ℔ 8¼@8¾¢

Imported—

Armitage's Mouse Hole.....8¾@9¼¢
Peter Wright's.....9¼@9¾¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....20%

Apple Parers—See *Parers, Apple, &c.*

Augers and Bits—

Common Double Spur....70¢&10@75%
Boring Machine Augers.....70¢&10@75%
Car Bits, 12-in. twist.....70@70¢&5%
Jennings' Pattern:
Auger Bits.....60¢&10@60¢&10¢&5%
Ford's Auger and Car Bits..40&10@40&10&10%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list....40@40&10%
No. 30, R. Jennings' List..50&10@60%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits15&10@15&10&5%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....70%
Snell's Bell Hangers' Bits.....50%
Snell's Car Bits.....60&10&5@70%
Wright's Jennings Bits (R. Jennings' list).....50%

Bit Stock Drills—

Standard List .....60¢&10¢&10@70¢&5%

Expansive Bits—

Clark's small, $18; large, $26.....50&10%
Lavigne's Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18.....50&10%
Steer's No. 1, $26; No. 2, $18...40@40&5%
Swan's.....40@40&10%

Gimlet Bits—

Common Double Cut..gro. $2.75@3.25
German Pattern.....gro. $5.00@5.50
Double Cut, makers' lists.....50¢&5@50&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz.....$18.00
Douglass'.....33⅓@33⅓&10%

Ship Augers and Bits—

Ford's.....40&10@40&10&10%
Snell's.....40@40&10%
L'Hommedieu's.....15&10@15&10&10%
Watrous'.....40@40&10%

Awl Hafts, See *Hafts, Awl.*

Awls—

Brad Awls:
Handled.....gro. $2.75@3.10
Unhandled, Shouldered gro.63@66c
Unhandled, Patent.....gro. 66@70c
Peg Awls:
Unhandled, Patent....gro. 31@34c
Unhandled, Shouldered.gro.65@70c
Scratch Awls:
Handled, Common..gro. $3.50@4.00
Handled, Socket..gro. $11.50@12.00

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

First Quality, best brands.$6.00@6.25
First Quality, other brands$5.50@5.75
Jobbers' Special Brands:
Good Quality.....$5.00@5.25
Best Quality.....$5.50@5.75
Cheap, Handled Axes....$4.75@5.00
Beveled, add 25c doz.

Note.—Jobbers' prices are now usually lower than the manufacturers.

Axle Grease—See *Grease, Axle.*

Axles—

	Iron.	Steel.	
Concord, loose collar	6¼c	6 c	5% cash 10 days.
Concord, solid collar	6¾c	6½c	
No. 1 Common	5 c	4¾c	
No. 1¼ Com. New Style	5½c	5¼c	
No. 2, Solid Collar	5¾c	5½c	
Nos. 7, 8, 11 to 14		50&10%	
Nos. 7, 8, 11 to 14, 100 sets		60%	
Nos. 15 to 18		50%	
Nos. 19 to 22		60¢10%	

Boxes, Axle—

Common and Concord, not turned..lb. 5c
Common and Concord, turned..lb. 6c
Half Patent.....lb. 9c

Balances—

Sash—
Caldwell low list.....25%
Pullman's.....60%

Spring—
Spring Balances .....50@50&5%
Chatillon's Light Spg. Balances...40&10%
Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50%
Chatillon's Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb...3¼@4c

Beams, Scale—

Scale Beams, List Jan. 12, '82.....35@40¢5%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover..₩ gro. $5.50
No. 10 Cas. Handle Dover..₩ gro. $7.00
No. 10 Steel Handle Dover..₩ gro. $7.00
No. 15 Extra Heavy Steel Handle. ₩ gro $14.00
Rival, ₩ gro.....$9 00
Taplin Mfg. Co.:
No 50, per doz., $5 50; No 100, $7.00; No. 102, $8 50; No. 150, $14.00; No. 152, $16.00.
Lyon's, Standard size.....₩ doz. $1.75
Wonder (S. S. & Co.).....₩ doz. 75¢

Bellows—

Blacksmith—
Standard List.....70@70&5%

Inch..	30	32	34	36	38	40	Net Prices.
Each	$4.25	4.50	5 25	5.75	6.50	7.75	
Extra Length:							
Each	$4.75	5.25	5.75	6.50	7.40	8.75	

Molders—

Inch..	9	10	11	12	14	16	Net Prices.
Doz	$6.75	7.25	8 50	9.50	12.00	14.50	

Hand—

Inch...	6	7	8	9	10	12	Net Prices.
Doz	$3.75	4.25	4.50	5.00	5.75	6.75	

Bells—Cow—

Ordinary goods.....75¢10%
High grade.....70@70¢10%
Jersey.....75@75&10%
Texas Star.....50&10%

Door—

Gong, Yankee.....55%
Hotchkiss, R. & E. Mfg. Co.'s.....50&10%
Lever and Pull, Sargent's.....45&10@45&10&5%

Hand—

Hand Bells, Polished.....65@65&10%
White Metal .....65@65&10%
Nickel Plated.....50@50&10%
Swiss .....60@60&10%

Miscellaneous—

Farm Bells.....lb. 2@2½c
Steel Alloy Church and School.....50&10@60%
Wilmot & Hobbs Mfg. Co, Gongs.65@70%

Belting

Rubber—
Common Standard.....70&10@75%
Standard.....60¢10@70%
Extra.....60@60&10%
High Grade.....60@60&10%

Leather—
Extra Heavy, Short Lap .....50&10%
Regular Short Lap .....60@60&5%
Standard .....60¢10@60¢10¢&5%
Light Standard.....70¢10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Brettell Tire Upsetter, $15.....50%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters.....40@50%

Bicycle Goods—

Lane's Cycle Hanger.....33⅓&5%
Joan S. Lang's Son's 1899 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—Tackle—

Common Wooden .....75&5@75¢10%
Eddy's Steel.....60&10@70%
Hartz Steel.....50&10@60%
Ford's Star Brand, Self Lubricating..70%
Hollow Steel, Ford's Pat. Star Brand.....50&10%
Lane's Patent Automatic Lock and Junior.....30%
Stowell's Novelty, Mal. Iron.....50&10%
See also *Machines, Hoisting.*

Boards, Stove—

1899 List:
Zinc.....80%
Crystal and Embossed ... .40%

Bolts—

Carriage, Machine, &c.—
Common, list Jan. 30, '95..50@50&10@..%
Norway Iron, $3.00, list Oct. 7, '84..75¢10@75¢10¢5%
Phila. Eagle, $3.00 list.....80@80¢10%
Bolt Ends, list Jan. 30, '95.....50¢10@....%
Machine, list Oct. 1, '99..50¢10@....%

NOTE.—*Jobbers' prices on Bolts are now generally lower than manufacturers'.*

Door and Shutter—
Cast Iron Barrel, Round Brass Knob:

Inch	3	4	5	6	8
Per doz	$0.27	.30	.38	.53	.66

Cast Iron Bottom, Japanned:

Inch	6	8	10
Per doz	$0.83	1.05	1.65

Cast Iron Chain, Flat, Japanned:

Inch	6	8	10
Per doz	$1.10	1.32	1.87

Cast Iron Shutter, Brass Knobs:

Inch	6	8	10
Per doz	$0.49	.77	.88

Wrought Barrel Brass Knob:

Inch	3	4	5	6	8
Per doz	$0.44	.50	.61	.70	1.38

Wrought Barrel .....70¢10@75%
Wrought Barrel, Bronzed.50@50¢10%
Wrought Flush, B. K.....50¢20@70%
Wrought Shutter.....60@60¢10¢5%
Wrought Square Neck.60¢10&10@70%
Wrought Sunk.....60@60¢10%
Ives' Patent Door.....62½@62½&10%

Stove and Plow—
Plow .....50¢10@60%
Stove, list August 27, 1898..62½@....%

Tire—
Common, list Feb. 28, '83....60@60¢10%
American Screw Company:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Bay State, list Feb. 28, '83.....60%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....70%
Eagle Phila., list Oct. 16, '84.....75%
Eclipse, list Feb. 28, '83.....60%
Port Chester Bolt & Nut Company
Empire, list Feb. 28, '83.....60%
Keystone Phila., list Oct. '84.....75%
Norway Phila., list Oct. '84.....70%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch	1¼	1½	1¾	2
Per doz	$5.50	4.50	5.00	6.50
Inch		2¼		2½
Per Doz		$7.50		10.25

Enterprise Mfg. Co.....25@30%
No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.

Boring Machines—*See Machines, Boring.*

Boxes, Mitre—

Seavey's, per doz., $24.00.....25%

Braces—

NOTE.—*Most Braces are sold at net prices.*

Common Ball, American..$1.10@1.20
Barber's.....60@60&10%
Fray's Genuine Spofford's.....50&10&5%
Fray's No. 70 to 120, 81 to 123, 207 to 414.....50&10&5%
P., S. & W. Co., Peck's Patent.....50&10@60%

Brackets—

Cast Iron, plain.....60¢10@70¢10%
Wrought Steel.....70¢10@75¢5%
Bradley's Wire Shelf.....75&10@80%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Wire Goods Co.....75@75&10%

Buckets, Well and Fire—See *Pails*

Bucks, Saw—

Hoosier.....₩ gro. $22.00@$24.00

Bull Rings—See *Rings, Bull.*

Butts—Brass—

Wrought list Sept., '98.....25@33⅓%
Cast Brass, Tiebout's.....50%

Cast Iron—
Fast Joint, Broad.....50¢10@60%
Fast Joint, Narrow.....50¢10@60%
Loose Joint.....70¢5@75%
Loose Pin.....70¢5@75%
Mayer's Hinges.....70¢5@75%
Parliament Butts.....70¢5@75%

Wrought Steel—
Loose Joint, Table and Back Flaps, Narrow and Broad, Inside Blind, Loose Pin.....70¢10@75%
Loose Pin, Ball and Steeple Tip.....80@80&5%
Bronzed Wrought Narrow and Inside Blind Butts.....50&10@50&10&5%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....10%
1200 series.....40%
200, 300, 600 and 900 series.40&10@50%
Hendryx Bronze:
700, 800 series.....40&10@50%
Hendryx Enameled.....40&10@50%

Calipers—See *Compasses.*

Calks. Toe—

Burke's, One Prong, Blunt..5¢.....5%
Burke's, One Prong, Sharp..6¢.....12½%
Burke's Two Prong, Blunt..6¢.....12½%
Burke's Two Prong, Sharp.7¢..10&5&5%

Can Openers—See *Openers, Can*

Cans, Milk—

Buffalo Pattern: 5 8 10 gal.
.....$3.60 $4.00..33⅓%
Illinois Pattern. $2 00 3.10 3.50..33⅓%
Iowa Pattern... 2.25 3.35 3.75..33⅓%
20 30 40 qts.
New York Patt'rn3.75 4.20 4.40..33⅓%
Baltimore P. tt'rn2.60 2 90 3.03 net

Cans, Oil—

Galvanized Blue Band, 1-gal., ₩ doz. $1.60@$1.80
S. S. & Co., Galvanized Family with faucet, 3-gal., ₩ gro. $54, 5-gal., $63; 10-gal., $120.00
Glass Oil.....₩ doz. $1.90@$2.20

Caps—Percussion—

Eley's E. B.....50c
G. D.....per M 32@34c
F. L.....per M 37@40c
G E.....per M 47@50c
Musket.....per M 57@60c

Primers—

Berdan Primers, $1.00 ..... 5%
B. L. Caps (Sturtevant Shells) $1.00 ..... 5%
All other primers..... *$1.10@$1.12*

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con., Ball Swgd. ... *$1.90*
B. B Caps, Round Ball... *$1.12@1.18*
Blank Cartridges:
32 C. F., $5.50..... 10c&5%
38 C. F., $7.00..... 10c&5%
22 cal. Rim, $1.50..... 10c&5%
32 cal. Rim, $2.75..... 10c&5%
Central Fire..... 25%
Pistol and Rifle..... 15c&5%
Primed Shells and Bullets..... 15c&5%
Rim Fire Sporting..... 50%
Rim Fire, Military..... 15c&5%

Casters—

Red.....60c&10% } Extra 10% often given.
Plate.....60c&10% }
Plate, part Brass....50c&10% }
Philadelphia..... 60c&10% }
Martin's Patent (Phœnix).....60@60&5%
Payson's Anti-friction Furniture.70&10%
Payson's Anti-Friction Truck....70&10%
Standard Ball Bearing..... 45%
Tucker's Patent, low list.....50@50&5%

Cattle Leaders—

See *Leaders, Cattle.*

Chain—

American Coil, Full Casks:
3-16 ¼ 5-16 ⅜ 7-16 ½ 9-16
8.75 6.85 5.85 5.00 4.85 4.75 4.65
⅝ ¾ ⅞ 1 inch.
4.50 4.40 4.40 4.40 cents per lb.
Less than Cask lots add ¼@½c per lb.
German Coil, list July 24, '97..... 60&10@60&10&10%
German Halter Chain, list July 24, '97..... 60&10@60&10&10%
Trace, Wagon and Fancy Chains, list April, '98.....50&10@50&10&5%
Jack Chain, list July 10, '98:
Iron.....50&5@50%
Brass.....50&5@60%
Gal. Pump Chain..... *lb. 5@5½c*
Breast, Hitching and Rein Chains
Covert Sad. Works..... 70%
Covert Mfg. Co.:
Breast.....35&2%
Halter.....35&2%
Heel.....35&2%
Rein.....35&2%
Stallion.....35&2%
Oneida Community:
Eureka Coil and Halter...60&5@65&5%
Niagara Coil and Halters.60&5@65&5%
Niagara Cow Ties.....50&5@55&5%
Am. Coil and Halters....50&10&5@60%
Am. Cow Ties..... 45@50%

Chalk—(From Jobbers.)

Carpenters', Blue.....*gro. 50@52c*
Carpenters', Red.....*gro. 45@47c*
Carpenters', White.....*gro. 40@42c*
See also Crayons.

Chalk Lines—See *Lines.*

Checks, Door—

Bardsley's..... 40%
Columbia..... 50&10%
Eclipse.....60@60&10%

Chisels—

Socket Framing and Firmer

Standard List.....70c&10@75c&10%
Buck Bros..... 30%
Charles Buck..... 30%
Swan's..... 75@75&5&2½%
L. & I. J. White..... 30@30&5%

Tanged—

Tanged Firmers.....40c&10@50%
Buck Bros..... 30%
Charles Buck..... 30%
L. & I. J. White, Tanged.....25&5%

Cold—

Cold Chisels, good quality lb. 14@16c
Cold Chisels, fair quality..... *lb. 12c*
Cold Chisels, ordinary..... *lb. 8@9c*

Chucks—

Beach Pat., each $8.00..... 20%
Skinner Patent Chucks:
Combination Lathe Chucks.....40%
Drill Chucks..... 30%
Independent Lathe Chucks.....40%
Improved Planer Chucks..... 20%
Universal Lathe Chucks.....40%
Face Plate Jaws..... 35%
Union Mfg. Co.:
Combination..... 40%
Czar Drill..... 30%
Geared Scroll.....33⅓&10%
Independent..... 40%
Union Drill..... 30%
Universal..... 40%
Face Plate Jaws.....35%

Clamps—

Adjustable, Hammers'.....20@20&5%
Adjustable, Stearns'..... 30%
Cabinet, Sargent's.....45&10@50&10%
Carriage Makers', P., S. & W. Co..40&10%
Carriage Makers', Sargent's..... 50&10@50&10&5%
Besly, Parallel..... 33⅓&10%
Lineman's, Ulica Drop Forge & Tool Co..... 40%
Saw Clamps, see *Vises, Saw Filers'.*

Cleaners, Walk—

Star Socket, All Steel....₩ doz. $4.00 net
Star Shank, All Steel....₩ doz. $3.75 net

Cleavers, Butchers'—

Foster Bros..... 30%
New Haven Edge Tool Co.'s.....40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%
Fayette R. Plumb..... 5%
P., S. & W.....33⅓&5@33⅓&10%
L. & I. J. White.....25%

Clippers—

Chicago Flexible Shaft Company:
Handy Toilet.....₩ doz. $7.20
Mascotte Toilet.....₩ doz. $8.40
Monitor Toilet.....₩ doz. $9.00
Stewart's Patent.....₩ doz. $10.00

Clips, Axle—

Eagle and Superior ¼ and 5-16 inch.....70c&10@75%
Norway, ¼ and 5-16 inch...70@70c&5%

Cloth and Netting, Wire—*See Wire, &c.*

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.)..... 70@70c&5%

Coffee Mills—See *Mills, Coffee.*

Collars Dog—

Brass, Pope & Stevens' list.....40%
Embossed, Gilt, Pope & Stevens' list30&10%
Leather, Pope & Stevens' list..... 40%

Compasses, Dividers, &c.

Ordinary Goods.....70c&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....70%
Calipers, Inside or Outside.....70%
Calipers, Wing.....60%
Compasses.....50&5%
J. Stevens A. & T. Co.....25&10%

Coolers, Water—

S. S. & Co.: 2-gal., $14.00; 3-gal., $16.00; 4-gal., $18.50; 6 gal., $23.00

Coopers' Tools—

See *Tools, Coopers'.*

Cord— Sash—

Braided, Drab..... *lb. 21@22c*
Braided, White, Common, lb..15@16c
Cable Laid Italian, lb. A, 18c; B, 16c
Common India..... *lb. 8½@9½c*
Cotton Sash Cord, Twisted....10@15c
Patent Russia..... *lb. 12 @13c*
Cable Laid Russia..... *lb. 13½@14c*
India Hemp, Braided..... *lb. 14@15c*
India Hemp..... *lb. 9@10c*
Patent India..... *lb. 10 c*
Pearl Braided, cotton..... ₩ lb 16¢
Massachusetts, White..... ₩ lb 26¢
Massachusetts, Drab..... ₩ lb 24¢
Eddystone Braided Cotton..... ₩ lb 18¢
Harmony Cable Laid Italian..... ₩ lb 18¢
Ossawan Mills:
Crown, Solid Braided White....₩ lb 17¢
Braided, Giant, White..... ₩ lb 16¢
Peerless:
Cable Laid Italian.....16¢
Cable Laid Russian.....13¢
Cable Laid India.....11¢
Braided India.....18¢
Phœnix, White.....17¢
Samson:
Braided, Drab Cotton.....₩ lb 31¢
Braided, Italian Hemp.....₩ lb 31¢
Braided, Linen..... ₩ lb 44¢
Braided, White Cotton, Spot...₩ lb 27¢
Silver Lake:
A quality, Drab, 40¢.....15&10%
A quality, White, 35¢.....15&10%
B quality, Drab, 35¢.....15&10%
B quality, White, 30¢.....15&10%
Italian Hemp, 40¢ ..... 15&10%
Linen, 57½¢..... 15&10%

Wire, Picture—

Braided or Twisted.....70@75%

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Acme, Japanned, ₩ gr. $30.....40%
Acme, Nickel Plated, ₩ gr. $30.....20%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....55%

Crayons—

White Round Crayons, gross...5@6c
Cases, 100 gro., $4.50 @$5.00, at factory.
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crooks, Shepherds'—

Fort Madison, Heavy .....₩ doz. $7.00
Fort Madison, Light.....₩ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—

Victor Garden .....₩ doz. $10.00

Cutters—Glass—

Smith & Heminway Co.....40%

Meat—

American.....30%

Nos.	1	2	3	4	5	6
Each	$5	$7	$10	$25	$50	$60

Connecticut:

Nos.	0	1	8	10	12
Each	$1.75	2.25	3.00	3.00	3.50

Enterprise.....25@25&7½%

Nos.	3	10	12	22	32
Each	$2	$3	$2.50	$4	$6

Dixon's, ₩ doz.....33⅓&10%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Hale's, ₩ doz.....60&10&10@70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₩ doz. $26.00..... 60%
Little Giant, ₩ doz.....33⅓&33⅓&5%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$71.00	$68.00

Miles' Challenge, ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

New Triumph No. 605, ₩ doz. $24.00.. 33⅓&5%

Woodruff's, ₩ doz	100	150
Nos.	$15.00	$18.00

40%

Chadborn's Smoked Beef Cutter, ₩ doz. $60.00
Enterprise Beef Shavers..... ..25@30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters 24 x 7, 26 x 8, 30 x 9..55%
Kraut Cutters 36 x 12, 40 x 12.....40%
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....50@50&10%
Slaw Cutters, 1 Knife, ₩ gr....$15@$18
Slaw Cutters, 2 Knife, ₩ gr...$20@$27

Tobacco—

All Iron, Cheap.....*doz. $4.50@$5.00*
Enterprise.....25@30%
National, ₩ doz. $21.00..... 40%
Sargent's, ₩ doz. $24.00.....60@60&10%

Washer—

Appleton's, ₩ doz. $16.00..... 60&10@60&10&10%
Bonney's.....₩ doz. $4.75

Diggers, Post Hole, &c.—

Iwan's Improved Post Hole Auger....40%
Iwan's Perfection Post Hole Digger..... ₩ doz. $10.00
Samson, ₩ doz. $34.00.....25%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—

See *Checks, Door.*

Door Springs—

See *Springs, Door.*

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, ₩ doz. $18; No. 2, $12; No. 3, $11; No. 4, $12.

Drawing Knives—

See *Knives, Drawing.*

Drills and Drill Stocks—

Common Blacksmiths' Drill..each $1.50@$1.60
Blacksmiths' Self-feeding..... *each $5.00@6.00*
Bench Drills, Stearns'.....50@50&10%
Breast, Millers Falls, each $3.00 .....25%
Breast, P., S. & W .....30@30&10%
Goodell Automatic Drills..40&5@40&10%
Ratchet, Bignall & Keeler.....30&5%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's, P. S. & W....40&10%
Whitney's Hand Drill, No. 1, $10.00:
Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—

Standard List.....60c&10&10@70c&5%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—

See *Pans, Dripping.*

Drivers, Screw—

Balsey's Screw Holder and Driver, ₩ doz. 2½-inch, $6; 4-in., $7.50 6-in., $9..40%
Buck Bros..... 30%
Buck Bros' Screw Driver Bits..... 27½%
Champion..... 40&10%
Disston's Flat Blade, Electric, &c....70%
Douglass Mfg. Co.....20@20&10%
Fray's Hol. H'dle Sets, No. 3, $12.00 50%
Gay & Parsons' Ratchet..... 35%
Goodell's Automatic 50c&10@50c&10&10&5%
Mayhew's Black Handle..... 50%
Mayhew's Monarch..... 45&10%
New England Specialty Co.....50&10%
New York, Manhattan and Handy...30%
Sargent & Co.'s:
Nos. 1, 20, 40 and 60.50&10@50&10&5%
Nos. 50 and 55.....50&10&10@60&5%
Screw Driver Bits.....₩ doz. 50@70¢
Stanley's R. & L. Co.'s:
No. 64, Varnished Handles.....70&10%
No. 80..... 75&10%

Egg Beaters—See *Beaters, Egg.*

Emery—*Nos. 4 to 54 to Flour, CF:*

	46 gro.	*1.80 gro.*	*F.FF.*
Kegs.....*lb.*	*4½c*	*5 c*	*5 c*
½ Kegs....*lb.*	*4¾c*	*5¼c*	*5¼c*
¼ Kegs....*lb.*	*5 c*	*5½c*	*5½c*
10-lb cans, 10 in case.....	*6 c*	*6½c*	*5½c*
10-lb. cans, less than 10.....	*10 c*	*10 c*	*8c*

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—

See *Pins, Escutcheon.*

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Zimmerman's ....50&10%

Faucets—

Cork Lined..... *70c&5@70c&10c&5%*
Metallic Key, Leather Lined..... *65c&10@70%*
Red Cedar..... *50@50c&10%*
B. & L. B. Co.:
West's Lock, Open and Shut Key50&10%
John Sommer's Peerless Tin Key.... 40%
John Sommer's Boss Tin Key..... 50%
John Sommer's Victor Metal Key.50&10%
John Sommer's Duplex Metal Key....60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined. 50&10%
John Sommer's Common Cork Lined.70%
John Sommer's Chicago Cork Lined..60%
John Sommer's O. K. Cork Lined.....50%
John Sommer's Perfection Cedar.....40%
Star..... 60@60&5%
Star, Metal Plug, new list.....40@40&5%
Lockport, Metal Plug, reduced list.60&5%
Self Measuring:
Enterprise, ₩ doz. $36.00..... .....40%
Lane's, ₩ doz. $36.00 .....33⅓%
National Measuring, ₩ doz. $36.00....40%

Felloe Plates—

See *Plates, Felloe.*

Files—Domestic—

List revised June 1, 1899.
Best Brands..... *70@70c&10%*
Good Brands..... *75@75c&10%*
Fair Brands..... *75c&10@80%*
Second Quality.....*80c&10@80c&10c&10%*

Imported—

Stubs' Tapers, Stubs' list, July 24, '97..... 25%

Fixtures, Grindstone—

Net Prices:

Inch....	*15*	*17*	*19*	*21*	*24*
Per doz.	*$3.30*	*3.55*	*3.75*	*4.50*	*5.25*

Stowell's Grant Grindstone Hanger..... ₩ doz. $6.00@$7.00
Stowell's Grindstone Fixtures....55&10%
P., S. & W. Co.....50&10&10%
Reading Hardware Co.....30&20&10%
Sargent's Patent.....70&10@70&10&10%

Fluting Machines—

See *Machines, Fluting.*

Fodder Squeezers—

See *Squeezers, Fodder.*

Forks—

Aug. 1, 1899, list.
Hay, 2 tine..... *65%*
Hay, 3 tine..... *66⅔%*
Manure, 4 tine..... *70%*
Manure, 5 and 6 tine..... *70%*
Spading..... *70c&5%*
Victor, Hay..... ...70%
Victor, Manure..... 70&8%
Victor, Header..... 70&2%
Champion, Hay..... 60&30%
Champion, Manure..... 70&5%
Columbia, Hay..... 66⅔&5%
Columbia, Manure 70%
Columbia, Spading..... 70&10%
Hawkeye Wood Barley 4 tine ₩ doz. $5.00; 6 tine, $6.00.
Plated.—See *Spoons.*

Frames—

Saw—

Red, Polished and Varnished..doz. $1.00@$1.10
White..... *doz. 70@75c*

Screens, Window and Door—

Bonanza Window Screens.....60@60&5%
Phillips' Window Screen Frames..60&5%
Porter's Extension Window Screens.. 60&5%
Wabash Spring Adj. Screen..... 50%
Warner's Screen Corner Irons, Nos. 0B&00B..... 50%

Freezers, Ice Cream—

Qts...	*2*	*3*	*4*	*6*	*8*	*10*
Best.	*$1.40*	*1.60*	*1.85*	*2.50*	*3.00*	*3.90*
Good	*$1.25*	*1.35*	*1.70*	*2.05*	*2.65*	*3.50*
Fair.	*$1.00*	*1.10*	*1.30*	*1.75*	*2.30*	*2.90*

Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse—

	Per 1000 Feet.	
Hemp Fuse	*$2.60*	List
Cotton Fuse	*2.90*	
Single Taped Fuse	*3.50*	
Double Taped Fuse	*4.70*	
Triple Taped Fuse	*5.70*	

Gates, Molasses and Oil—

Stebbin's.....*80c&20@35%*

Gauges—

Marking, Mortise, &c...... *60c&10@60c&10c&10%*
Barrett's Comb. Roller Gauge..... ₩ doz. $6.75@7.25
Stanley R. & L. Co.'s Butt & Rabbet Gauge..... 35&10%
Wire, Brown & Sharpe's..... 25%
Wire, Morse's..... 25%
Wire, P., S. & W. Co.....10@10&5%

Gimlets—
Nail, Metal, Assorted..gro. $1.40@1.75
Spike, Metal, Assorted gro. $3.00@3.50
Nail, Wood Handled, Assorted, gro. $4.00@4.50
Spike, Wood Handled, Assorted gro. $5 00@5.25

Glass, American Window
List Jan. 1, 1898.
Small lots from store:
Eastern.....80&20%
Western.....80&20@85&5%
From Factory, with Frt. Allowance:
Carloads.....80&15%
1000 boxes or more, Gulf Ports.... 85&10%
3000 boxes or more.....80&20%
5000 boxes or more.....85%

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush. 37½@50%
List B, Cans (¼ pts., pts., qts.)..... 33½@43%
List C, Cans (¼ gal., gal.) ....25@45%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Allerton's Axle:
1 lb Tins, ₱ gr.....$9.00
3 lb Tin Pails, ₱ doz., $2.00; 5 lb, $3.00; 10 lb, $6.00.
25 lb wood pails.....₱ doz. $12.00
Dixon's Everlasting....10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ₱ doz. 1 lb $1.20; 2 lb $2.00
Lower grades, special brands, ₱ gr. $5.00@6.50

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
gro.
Peg Patent, Leather Top..$4.90@5.25
Peg Patent, Plain Top....$3.50@3 75
Sewing, Brass Ferrule. ....$1.50@1 60
Saddlers', Brass Ferrule..$1.35@1 45
Peg, Common.....$1.25@1 35
Brad, Common.....$1.50@1.75

Halters and Ties—
Covert Mfg. Co., Web.....45&2%
Covert Mfg. Co., Jute Rope.....45&2%
Covert Mfg. Co., Sisal Rope.....30&2%
Covert's Saddlery Works', 96 list.....70%

Hammers—
Handled Hammers—
Heller's Machinists'.....40@40&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....40&10%
Peck, Stow & Wilcox.....40@40&5%
Fayette R. Plumb:
Artisans' Choice, A. E. Nail..33½&7½%
Engineers' and B. S. Hand.....50&10%
Machinists' Hammers.....50&10%
A. E. & A. E., Bell Face Nail...33½&7½%
Sargent's C. S. New List.....45@50%

Heavy Hammers and Sledges—
3 lb. and under...lb. 45c
3 to 5 lb.....lb. 35c } 75&5@75
Over 5 lb.....lb. 30c } &10&5%
Note.—Lower net prices sometimes made by jobbers.
Wilkinson's Smiths'.....3½c@10c lb.

Handcuffs and Leg Irons
See *Police Goods.*

Handles—
Agricultural Tool Handles—
Hoe, Rake, Fork, &c.....50&10@60%
Shovel, &c., Wood D Handle.50@50&5%

Cross-Cut Saw Handles—
Atkins'.....40%
Champion.....45@45&10%
Disston's.....50%

Mechanics' Tool Handles—
Auger, assorted.....gro. $2.25@$2 50
Auger, large.....gro. $2.75@$3.00
Brad Awl.....gro. $1.40@$1.50
Chisel Handles:
Apple Firmer, gro. ass'd. $2.25@ $2.50; large, $2.75@$3.00.
Hickory Firmer, gro. ass'd, $2.25 @$2.50; large, $2.50@$2.75.
Socket, gro. ass'd, Firmer, $1.50@ $1.60; Framing, $2.50@$2.75.
File, assorted.....gro. $1.00@$1 15
Hammer, Hatchet, Axe, &c...50&10%
Hoe, Rake and Fork..... 60&10@60&10&5%
Shovel and Spade, Wood D H'dle.. 60&1%
Hand Saw, Varnished, doz. 75@80c
Not Varnished.. .....55@60c
Plane Handles:
Jack, doz. 23@25c; Jack Bolted.. 55@60c
Fore, doz. 35@38c; Fore, Bolted.. 70@75c

Hangers—
Barn Door, New Pattern, Round Groove, Regular:

Inch	3	4	5	6	8
Doz	$1.05	1.40	1.80	2.20	2.75

Barn Door, New England Pattern, Check Back, Round Groove, Regular:

Inch	3	4	5	6
Doz	$3.00	3.50	3 25	4.00

Bigelow & Dowse Co.:
Paragon, No. 1, $3.50; No. 2, $4.50; No. 3, $5.50 ₱ doz.
Chicago Spring Butt Co.:
Friction.....35@35&10%
Oscillating.....35@35&10%
Big Twin.....35@35&10%
Chisholm & Moore Mfg. Co.:
Advance.....55%
Cleveland.....60%
Baggage Car Door.....50%
Elevator.....40%
Railroad.....55%
Czar Ball Bearing, ₱ doz. pair $8.50
No. 10 Roller Bearing..doz. pr. 5.50
No. 20 Roller Bearing..doz. pr. 4.50
Nickel.....50%
J. G. C.....50&2&10%
Lane Bros.:
Parlor, Standard.....40&5&2½%
Parlor, New Model.....40&2½%
Barn Door, Standard.....60&2½%
Covered.....50&10&10%
Special.....60&5%
Lawrence Bros.:
Crown.....60&10%
New York.....60&10@60&10&5%
Sterling.....60&10%
McKinney Mfg. Co.:
No. 2, Standard, $18.....60&10%
No. 1, Special, $13.....60&10%
Stowell Mfg. and Foundry Co.:
Badger.....60&10%
Baggage Car Door.....33⅓%
Climax Anti-Friction.....55&5%
Elevator.....40%
Interstate.....60%
Magic.....50%
Matchless.....50&10%
Nanson.....50&10%
Parlor Door.....50%
Railroad.....55&5%
Street Car Door.....50&10%
Steel, Nos. 300, 400, 500.....45&15%
Wild West.....50&5%
Zenith for Wood Track.....55&5%
Taylor & Boggs Foundry Co.:
Kidder's.....50@50&10%
Van Wagoner & Williams Hdw Co.:
American Trackless.....33⅓&10%
Wilcox Mfg. Co.:
Aurora Steel Endless.....60%
Bike Roller Bearing....60&10&10%
Bike Steel Endless.....60&10&10%
C. J. Roller Bearing.....60&10&10%
Cycle Ball Bearing.....50&10%
Dye Steel.....60&10%
Economical Single Track.50&10&5%
L. T. Roller Bearing.....70%
New Era.....50&10%
New Richards.....60%
O. K. Roller Bearing.....70%
Prindle Improved.....60&10%
Richards' Improved.....60&10%
Richards' Single Track.....50&10%
Wilcox Dwarf Roller Bearing..... 40&10%
Wilcox-Ives.....60&10%
Wilcox Tandem Roller Bearing.. 60&10%
Wilcox Trolley Ball Bearing..... 40&10%
Wilcox Trolley Roller Bearing..50%
Wilcox Trolley Roller Bearing, Fire.....40&10%
Wood Track.....60%

Extra 5@10% often given.

Harness Menders—See *Menders.*

Harness Snaps—See *Snaps.*

Hasps—
McKinney's Perfect Hasp, ₱ doz. $1.10 40&10%
Wrought Hasps, Staples, &c.—See *Wrought Goods.*

Hatchets—
Best Brands.....40¢12½@50&5%
Cheaper Brands.....50&10@60&5%
Note.—Net prices often made.

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind Hinges—
Lull & Porter:

No.	1	1¼	2	2¼
Doz. pair	$0 65	.60	.56	.48

1868 Old Pattern:

No.	1	3	5
Doz. pair	$0.74	1.35	2.60

Parker.....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10%
Sargent's, Nos. 1, 3, 5, 11, 13..75@75&10%
Wrightsville H'dware Co.:
Acme, Lull & Porter.....75%
Buffalo Gravity Locking, Nos. 1, 3 and 5.....75%
Champion Gravity Locking, No. 75.80%
1868, Old Pat'n, Nos. 1, 3 & 5...75&10%
Tip Pattern, Nos. 1, 3 and 5.....75&10%
Double Locking, Nos. 20 and 25.70&10%
Empire, Nos. 101 and 103.....70%
Niagara Gravity Locking, Nos. 1, 3 and 5.....75&15&5%
Noiseless, Nos. 50, 60, 65 and 55..75&5%
O. S. Lull & Porter.....75&5%
Pioneer, Nos. 060, 45 and 5½....75&5%
Steamboat Gravity Locking, No. 10.. 80%
Stanley's Steel Gravity Blind Hinges, ₱ doz. sets $1.20.....20&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	1	2	3
Hinges with Latches	$1.90	2.50	4.25
Hinges only	1.30	1.55	3.20
Latches only	0.70	0.70	1.20

New England:
With Latch.....doz. $1.75@1.80
Without Latch....doz. $1.40@1.45
Reversible Self-Closing:
With Latch.....doz. $1.65@1.75
Without Latch....doz. $1.30@1.35
Western:
With Latch.....doz. $1.60@1.65
Without Latch....doz. $1.00@1.05

Spring Hinges—
Holdback, Cast Iron..... gro. $7.00@7.50
Non-Holdback, Cast Iron..... gro. $6 00@$6.50

J. Bardsley:
Bardsley's Patent Checking.....15%
Bommer Bros.:
Bommer's.....40%
Chicago Spring Butt Co.:
Chicago.....25%
Garden City Engine House..25%
Keene's Saloon Door.....25%
Coleman Hdw. Co.:
Champion Holdback....₱ gr. $9.00
J. G. C.....₱ gr. $9.00
Nickel.....₱ gr. $9.00
Lawson Mfg. Co.:
Matchless.....25%
Matchless Pivot.....40%
Payson Mfg. Co.:
Oblique, Dbl. Acting.....50@50&5%
Stover Mfg. Co.:
Ideal, No. 16, Detachable, ₱ gr. $12.50
Ideal, No. 4.....₱ gr. $9.00
New Idea No. 1.....₱ gr. $9.00
New Idea, Double Acting.....45%
Van Wagoner & Williams Hdw. Co.:
Acme.....30&5%
American.....30%
Columbia, No. 14.....₱ gr. $8.00
Columbia, No. 18.....₱ gr. $24.00
Crown.....30%
Gem.....30%
Knoxall.....₱ gr. $9.00
Oxford.....30%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1898:
Light Strap Hinges..50&5%
Heavy Strap Hinges..70%
Light T Hinges....50&10%
Heavy T Hinges....60&10%
Extra Heavy T Hinges... 60% } Extra 20&5%
Hinge Hasps.....45%
Stanley's Corrugated Heavy Strap.....70%
Stanley's Cor. Ex. Heavy T. 66⅔%
NOTE.—*Change in base discounts.*
Rolled Plate.....70@70&10%
Screw Hook and Strap. { *6 to 12 in..lb 3¼@3½c* / *14 to 20 in..lb. 3 @3¼c* / *22 to 36 in..lb. 2.75@3 c*

Hoes—
Eye—
Scovil and Oval Pattern..60@60&10%
Grub, list Feb. 23, 1899.....65@65&10%
D. & H. Scovil.....35@35&5%

Handled—
Aug. 1, 1899, List:
Field and Garden.....75&2%
Ladies', Boys', Toy and Onion... 70&10&10%
Street and Mortar.....75&7½&2%
Cotton.....70&10&10&5&2%
Planters'.....70&30%
Weeding.....75%
Note.—Manufacturers and jobbers use a diversity of lists, and often sell at net prices.
Ft. Madison Crucible Garden Hoe..... 75&2%
Ft. Madison Crescent Cultivator Hoe, per doz.....75&10&2%
Ft. Madison Mattock Hoe, ₱ doz....$4.50
Ft. Madison Sprouting Hoe, ₱ doz..$4.80
Ft. Madison Dixie Tobacco Hoe..... 75&20%
Kretsinger's Cut Easy, per doz....75&2%
Warren Hoe.....%

Hog Rings and Ringers—
See *Rings and Ringers.*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow Ware—
See *Ware, Hollow.*

Holders—
Bit—
Angular, ₱ doz. $24.00.....45&10%

File and Tool—
Nicholson File Holders and File Handles.....33⅓%

Hooks—
Cast Iron—
Bird Cage, Reading..... } Bird Cage, Sargent's List... } ...66⅔&70%
Clothes Line, Sargent's List...50&50&5%
Ceiling, Sargent's List.....50&50&5%
Clothes Line, Stowell's.....70&5%
Clothes Line, Reading List..... 65&10@65&10&10%
Coat and Hat, Stowell's.....70&5%
Coat and Hat, Reading.....70@75%
Coat and Hat, Sargent's List.....50&10%
Coat and Hat, Wrightsville.....65&10%
Harness, Reading List.....70&10@75%

Wire—
Belt.....80&10@80&10%
Atlas, Coat and Hat.....50@50&10%
Wire Coat and Hat:
Acme.....60@60&5%
B. B.....70@70&5%
Gem.....66⅔%
Bright Wire Goods—See *Wire.*

Wrought Iron—
Box, or Case, Octagon Steel.... doz. $2.00@2.15
Cotton.....doz. $1.00@1.10
Picture, T. & S. Mfg. Co.....75%
Tassel, T. & S. Mfg. Co.....50&10%
Wrought Staples, Hooks, &c.— See *Wrought Goods.*

Miscellaneous—
Bush, Light, doz. $5.50; Medium, $6.00; Heavy, $6.50

Grass.....Nos.	1	2	3	4
Best	$1.60	1.75	2.00	
Common	$1.50	1.50	1.50	1.75

Potato and Manure..... 75&15%
Whiffletree.....lb. 4¼c
Hooks and Eyes:
Brass.....70&10@75%
Malleable Iron.....75&10%
Covert Saddlery Works' Self Locking Gate and Door Hook, 4 in. ₱ gross $13.00; 6 in. $17.20..... 70%
Crown Picture.....50&10%
Bench Hooks—See *Bench Stops.*
Corn Hooks—*See Knives, Corn.*

Horse Nails—See *Nails, Horse*

Horseshoes—
See *Shoes, Horse.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition.....ft. 4¾@ 5¼c
3-ply Standard.....ft. 5½@ 6 c
4-ply Standard.....ft. 6½@ 6¾c
3-ply extra.....ft. 6¾@ 7½c
4-ply extra.....ft. 7½@ 8½c
High Grade.....ft. 9 @11 c
Cotton Garden, ¾-in., coupled:
Low Grade.....ft. 5¼@6c
Fair quality.....ft. 7 c
Good quality.....ft. 8 @ 8½c

Irons—Sad—
From 4 to 10.....lb 3½@3¾c
B. B. Sad Irons.. .....lb. 3¾c
Chinese Laundry.....lb. 4¼@4½c
Chinese Sad.....lb. 3½@3¾c
Mrs. Potts', per set:

Nos. 50	55	60	65
85@$1.00	78@93c	95@1.10	89@1.08

New England Pressing..lb.. 3¼@3½c

Soldering—
Soldering Coppers.....lb. 28@30c
Covert Mfg. Co..... 20&2%

Pinking—
Pinking Irons.....doz. 50@60c

Jack Screws—See *Screws.*

Jacks, Wagon—
Covert Mfg. Co., Steel.....45&2%
Daisy, ₱ doz. $12.00.....70%
Lockport.....40@40&10%
Victor, ₱ doz. $20.00.....70%
Lane's Steel.....33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 10, '99 15@20%
Enameled and Tea—See *Ware, Hollow.*

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—
Dick's Butcher Knives.....40%
Foster Bros.' Butcher, &c.....30%
Nichols' Butcher Knives.....50%
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—
Ft. Madison Cut-Easy, ₱ doz.....$3.25

Drawing—
Standard List.....75&5@75&10%
Adjustable Handle.....25@33⅓%
Bradley's.....33%
Swan's.....75@75&5&2½%
Watrous.....30&10@40%
L. & I. J. White.....20&5@25%
Cautelo's Folding.....50@50&5%

Hay and Straw—
Blizzard, from Jobbers.....$5.75@6.00
Iwan's Sickle Edge.....₱ doz. $11.50
Lightning, from Jobbers.....$6.50@7.00

Mincing—
Buffalo.....₱ gro. $15.00
Smith's, ₱ doz., Single, $2; Double, $3 45&50%

Miscellaneous—
Farriers'..... doz. $2 00@3.00
Wostenholme's.....₱ doz. $3.00@3.25

Knobs—
Base, 2¼-inch, Birch, Rubber tip, gro..... .....$1.90@1.95
Carriage, Jap, all sizes..gro. 35@40c
Door, Mineral.....doz. 62@65c
Door, Por. Jap'd.....doz. 75@78c
Door, Por. Nickel....doz. $1.70@1.80
Bardsley's Wood Door, Shutter, &c....15%
Picture, Sargent's.....70&10%
Snow's Victor.....50&10%

Ladles—Melting—
L. & G. Mfg. Co.....60%
P., S. & W.....40@40&10%
Reading.....50&10%
Sargent's.....60@60&10%

Lanterns—Tubular—
Regular Tubular.....doz. $4.00@4.50
Side Lift Tubular....doz. $4.25@4.75
Square Lift Tubular..doz. $4.21@4 75
Other Styles.....40&10@40&10&5%
Meyrose Side Lift Tubular, doz. $8.50.... 50&10&5%

Bull's Eye Police—
2¼-inch flash light....doz. $3.50@3.75
3-inch flash light.....doz. $4.00@4.25
2¼-inch regular.....doz. $3.25@3.50
3-inch regular.....doz. $3.50@3.75

Latches, Thumb—
Roggin's Latches.....doz. 35c@45c

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Small.....doz. 45c; large, 55c
Covert Mfg. Co.....45&1%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Dickson:
3 x 4 ft. x ¼ ..... ₩ 100 $10.00
Other sizes, Iron ..... 70&10%
Other sizes, Brass ..... 70&10%
Excelsior ..... 60@60&10%
Payson's:
Solid Grip Nos. 643 and 644, ₩ 100, $11.00
Bronzed Iron 70%

Lines—

Wire Clothes, Nos...	*18*	*19*	*20*
100 feet	*$2.50*	*2 25*	*2 00*
75 feet			*$1.50*

Ossawan Mills.
Crown Solid Braided Chalk 33⅓%
Mason's, No. 0 to No. 5 ..... 33⅓%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gr. 30%

Locks, &c.— Cabinet—

Cabinet Locks ..... *33⅓@33⅓&7½%*

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. ..... 45& 0%
Sargent & Co. ..... 40@40&10%
Slaymaker-Barry Co. ..... 30@35%
Snow's Victor ..... 50&10%

Elevator—

Stowell's 33⅓%

Padlocks—

Wrought Iron, list Dec. 3, '97.....
70&5@70&10&5%
Dog Collar, S. B. Co. 40%
R. & F. Mfg. Co. Wrt. Steel a d Brass. 50%
S. B. & Co. 40%

Sash, &c.—

Fitch's Patent ..... 65&10%
Ives' Patent ..... 62½&10@66⅔&10%
Payson's Perfect 70%
Payson's Signal (new list) 75%
Reading ..... 60&10&10@70%

Machines—

Boring—

Without Augers.

	Upright.	Angular.
Douglas	$2.50	$3.00
Jennings'	2.50	3.00
Millers' Falls		5.75
Snell's, Rice's Pat.	2.50	2.75

Fluting—

Crown Jewel, 6 in. ..... $2.50@2.75

Hoisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake. 20%

Washing—

Wayne American, ₩ doz. $27.00
Western Star, No. 2, ₩ doz. 28.00
Western Star, No. 3, ₩ doz. 30.00
St. Louis, No. 41, ₩ doz.. 60.00

Carload lots 10% off. Freight allowed.

Mallets—

Hickory ..... *50@50&10%*
Lignumvitæ ..... *50@50&10%*
Tinners', Hickory and Applewood, doz ..... *50@55c*
Fiber Head Stearns' ..... 33&10%

Mattocks—

List Feb. 23, 1899 ..... *65@65&10%*

Meat Cutters—

See *Cutters, Meat.*

Milk Cans—See *Cans, Milk.*

Mills— Coffee—

Box and Side, list Jan. 1, '88.....
60&5@60&10&5%
Net prices are often made on some goods which are lower than above discounts.
Enterprise Mfg. Co., list Jan. 17, '93. 30%
National, list Jan. 1, '94 ..... 30%
Parker's Columbia and Victor.... 60&10%
Parker's Upright ..... 30&10@40%
Swift, Lane Bros. 30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Net prices are generally quoted.

	10	*12*	*14*	*16-inch*
Cheap				*$1.50@$1.75*
Good	*3.00*	*3.25*	*3 50*	*3.75*
High Grade	*4.00*	*4.25*	*4.50*	*4 75*
Pennsylvania and Continental				60&10%
Philadelphia:				
All Styles except A and E				70&10%
Style A, all Steel				60&10%
Style E, Low Wheel				60&10%
Style E, High Wheel				70&10%
Racine				60&10&10%

Nails—

Cut and Wire. See Trade Report.
Wire Nails and Brads, Papered. List July 20, 1899,. .....
80&10@80&10&5%
Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos.	6	7	8	9	10
A. C.	25¢	23¢	22¢	21¢	21¢
					40&10&5%
Capewell	19¢	18¢	17¢	16¢	16¢
					10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢...
					40%
Champlain...	28¢	26¢	25¢	24¢	23¢
					40&5&2%
Maud S.	25¢	23¢	22¢	21¢	21¢
					50&10&5%
Neponset	23¢	21¢	20¢	19¢	18¢...
					40%
Putnam	23¢	21¢	20¢	19¢	18¢.
					33⅓%
Standard	23¢	21¢	20¢	19¢	18¢.
					40&10&5%
Star	23¢	21¢	20¢	19¢	18¢.
					35& 5%
Vulcan	23¢	21¢	20¢	19¢	18¢.
					33⅓& 5%

Picture—

	1½	*2*	*2½*	*3*	*3½ in.*
Brass Head	*.90*	*.95*	*1.00*	*1.05*	*1.10 gro.*
Por. Head	*.85*	*.90*	*.95*	*1.10*	*1.15 gro.*

Nippers, See *Pliers and Nippers.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—

List Feb. 1, '99.

Cold Punched, Mfrs. or U S. Standard	*Off list.*
Hexagon, plain	*4.30@4.50c*
Square, plain	*4.30@4.50c*
Square, C. T. & R	*4.10@4.30c*
Hexagon, C. T. & R.	*4.60@4.80c*
Hot Pressed:	
Mfrs., U. S. or Nar. Gauge Stan'd. Square	*4.40@4.60c*
Hexagon	*4.60@4.80c*

NOTE.—*Tapped Nuts are now* 2-10c. *higher than above.*

Oakum—

Best or Government ..... *lb. 5¾c*
Navy ..... *lb. 5¼c*
U. S. Navy ..... *lb. 5¼c*
Plumbers' Spun Navy *2¾c*
In carload lots ¼c lb. off f.o b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper ..... *40&10@50%*
Tin or Steel ..... *70@70&10%*
Zinc ..... *60@65&65%*
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4; No. 3, $4.40 ₩ doz. 20%
Malleable, Hammers' Old Pattern, same list ..... 50&10%
Wilmot & Hobbs Mfg. Co .... 70@70&10%

Openers, Can—

French ..... *doz 35c*
Iron Handle ..... *doz. 60@75c*
Sprague, Iron Hdle..per doz 40@45c
Sardine Scissors...doz. $1.75@$3.00
National, ₩ gro. ..... $1.75@$2.00
Stowell's ..... 75&10%

Packing—

Rubber—

Standard, fair quality .... 70&10@75%
Inferior quality ..... 75&10@80%
Extra ..... 60&5@60&10&5%
Jenkins' Standard, ₩ ℔ 80¢.... 25&25&5%

Miscellaneous—

American Packing ..... *9@10c lb.*
Cotton Packing ..... *13@14c lb.*
Italian Packing ..... *10½@11½c lb.*
Jute ..... *5@5¼c lb.*
Russia Packing ..... *12@13c lb.*

Pails—

Creamery—

S. S. & Co., with gauges.. No 1 $6.50; No. 2, $6.75 ₩ doz.

Galvanized—

Inch	*10*	*12*	*14*
Water, Standard, gro	*$23 00*	*$26 00*	*$29.00*
Water, Regular	*19.00*	*22.00*	*25.00*
Water, Heavy	*22.00*	*25.50*	*29.00*
Fire, Rd. Bottom, gro	*25.00*	*28.00*	*31.00*
Well, gro	*29 00*	*31.00*	*34.00*

Note.—See Trade Report.

Pans—

Dripping—

Large Sizes ..... *lb. 4¾c*
Small Sizes ..... *lb. 5¼c*

Fry—

Standard List ..... *80@80&10%*

Roasting and Baking—

Regal, S. S. & Co., ₩ doz., Nos. 5, $4.50; 10, $5.00; 20 $5.50; 30, $6.00
Simplex, ₩ gro., No. 40, $48.00; 50, $31.50; 60 $35 00; 140, $31.00; 150, $34.50; 160, $39.00.

Paper—

Building Paper—

	Per roll
Rosin Sized Sheathing:	*500 sq. ft.*
Light wt., 20 sq. ft. to lb	*$0 40@0.45*
Medium wt., 12 sq. ft. to lb	*$0.60@0.65*
Heavy wt., extra quality	*$0.95@1.05*
Medium Grades Water Proof Sheathing	*$0 80@1.25*
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$45.00@50.00*

York Haven Waterproof Sheathing... $1 35@1.75

Tarred Paper.

1 ply (roll 500 sq ft), ton ..... *$35 00@40.00*
2 ply, roll 100 sq. ft *90c*
3 ply, roll 100 sq. ft *$1.20*

Sand and Emery—

List April 19, 1886...50&5@50&10&5%

Parers—

Apple—

Advance ..... ₩ doz.	$4.50
Baldwin ..... ₩ doz.	$5.00
Bonanza ..... each	$5.00
Dandy ..... each	$7.50
Eureka, 1898 ..... each	$16.00
Family Bay State ..... ₩ doz.	$12.00
Hudson's Li tle Star ..... ₩ doz.	$4.00
Hudson's Ro king Table .... ₩ doz	$5.50
Improved Bay State ₩ doz.	$27.00@30.00
New Lightning ..... ₩ doz.	$5.50
Reading 72 ..... ₩ doz.	$4.00
Reading 78 ..... ₩ doz.	$7.00
Turn Table ..... ₩ doz.	$4.50
Turn Table '98 ..... ₩ doz.	$5 50
White Mountain ..... ₩ doz.	$4.00

Potato—

Saratoga ..... ₩ doz. $5.50
White Mountain ..... ₩ doz. $4.50

Picks and Mattocks—

List Feb 23, 1899 ..... *65@65&10%*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Escutcheon—

Brass ..... *60@60&5%*
Iron, list Nov. 11, '85 ..... *60@60&5%*

Pipe, Cast Iron Soil—

Factory Shipments.

Standard, 2-6 in ..... *50&10%*
Extra Heavy, 2 6 in *60%*
Fittings ..... *60&10%*

Pipe, Wrought Iron—

Factory Shipments.

List February, 1899.
Plain and Galvanized:
Carload lots ..... *50&10@50&10&10%*
Less than carload lots ..... *50&5@50&10%*
Screw and Socket Casing ..... *40&5%*
Inserted Joint Casing ..... *35&5%*
Cold Drawn Seamless Steel Tubing .. *60%*

Planes and Plane Irons—

Wood Planes—

Molding ..... *40&2½@40&5%*
Bench, First quality ..... *45&10@45&10&5%*
Bench, Second quality ..... *50&10@50&10&5%*
Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Gage Self Setting 35%

Iron Planes—

Bailey's (Stanley R. & L. Co) 50&10&10@50&10&10&10%
Chaplin's Iron Planes ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10&10@25&10&10&10%
Sargent's ..... 60&10&10@70%

Plane Irons—

Wood Bench Plane Irons ..... *30&5@30&10%*
Buck Bros. 30%
Butcher's ..... $5.00@5.25 to £
Stanley R. & L. Co.... 50&10@50&10&10%
L. & L. J. White ..... 20&5@25%

Plates—

Felloe ..... *lb 3½@3¾c*
Self-Sealing Pie Plates (S. S. & Co.), ₩ doz. $2.00 ..... 50%

Pliers and Nippers—

Gas	*7*	*8*	*9*	*10-in*
Best		*$3.25*	*$5.00*	*$4 75 doz.*
Good	*$1.40*	*2.25*	*2.75*	*3.25 doz.*

Acme Nippers 50%
Bernard's:
Parallel Pliers, &c 33⅓%
Paragon Pl ers 50%
Lodi Pliers 50%
Elm City Fence Pliers ..... 3 0&5%
Button's ..... 65@70%
Heller's Farriers' Pincers and Tools. 40@40&5%
Morrill's Parallel, ₩ doz. $12.00.. 30&5%
P., S. & W. Cast Steel ..... 30&10&10%
P., S. & W. Tinners' Cutting Nippers. 40@40&5%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—

Plumbs and Levels ..... *70¢&10¢@10¢&10¢&10%*
Disston's 70%
Pocket Levels ..... 75&10&10@75&10&10%
Stanley R. & L. Co. ..... 70¢&10&10@70¢&10¢&10&10%
Stanley's Duplex ..... 25&10@25&10&10%
Woods' Extension 33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $7.20; No. 2, $11.00; No. 3, $11.00; No. 4, $14.50 ..... 50%

Points, Glaziers'—

Bulk and 1 lb. papers.. lb. 10¼@11¼c
½-lb. papers ..... *lb. 11 @12 c*
¼-lb. papers ..... *lb. 11½@12½c*

Pokes, Animal—

Ft. Madison Hawkeye ..... ₩ doz. $3.00
Ft. Madison, Western ..... ₩ doz. $3.50

Police Goods—

Manufacturers' Lists ..... *25@25&10%*
Tower's 25%

Polish—Metal—

Prestoline Liquid, No. 1 (¼ pt.), ₩ doz. $3.00; No. 2 (1 qt.), $9.72 ..... 40%
Prestoline Paste ..... 33⅓@40%
U. S. Metal Polish Paste, 3 oz. boxes, ₩ doz. 50¢; ₩ gr. $4.50; ½ ℔ boxes, ₩ doz. $1.25; 1 ℔ boxes, ₩ doz. $2.25.
U. S. Liquid, 3 oz. cans, ₩ doz. $1.25; ₩ gr. $12.00.
Barkeepers' Friend Metal Polish, ₩ doz. $1.75; ₩ gr. $18.00.
Wynn's White Silk, ¼ pt. cans, ₩ doz. $1.50

Stove—

Joseph Dixon's, ₩ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₩ ℔ 8¢
Fireside ..... ₩ gr. $2.50
Gem, ₩ gr. $4.50 ..... 10%
Japanese ..... ₩ gr. $3.50
Jet Black ..... ₩ gr. $3.50
Wynn's Black Silk, 5 ℔ pail ..... ₩ ℔ 12¢
Wynn's Black Silk, ½ ℔ box, ₩ doz. $1.00
Wynn's Black Silk, 3 oz. box, ₩ doz. $0.75
Wynn's Black Silk, 8 oz. liq., ₩ doz. $1.00

Poppers, Corn—

Round or Square:
1 qt ..... *gro. $7.00@$8.00*
1½ qt ..... *gro. 9 00@ 10.00*
2 qt ..... *gro. 10.50@ 11.50*
Quincy Corn Popper, 1 qt., ₩ gr. $18.00; 2 qt., $24.00.

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled ..... *40¢&10@50%*
Tinned ..... *40¢&5@45%*

Powder—

In Canisters:
Duck, ½ lb. each *15c*
Fine Sporting, 1 lb each *75c*
Rifle, ½-lb. each *15c*
Rifle, 1-lb. each *25c*
In Kegs:
Duck, 6½-lb. kegs *$2.25*
Duck, 12½-lb. kegs *$4.25*
Duck, 25-lb kegs *$8.00*
Rifle, 6¼-lb. kegs *$1.25*
Rifle, 12½-lb. kegs *$2.25*
Rifle, 25-lb. kegs *$4.00*
King's Smokeless:
Keg (25 ℔ bulk) $20 00
Half Keg (12½ ℔ bulk) $10.25
Quarter Keg (6¼ ℔ bulk) $5.25
Canister (1 ℔ bulk) $0.90
Case, 1 ℔ Canisters (50 ℔ bulk) $45.00
Half Case, 1 ℔ Canisters (25 ℔ bulk) $22.75
King's Semi-Smokeless:
Keg (25 ℔ bulk) $16.00
Half Keg (12½ ℔ bulk) $8.25
Quarter Keg (6¼ ℔ bulk) $2.75
One Pound Can, bulk $0.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. ..... 20@25%

Pruning Hooks and Shears—See *Shears.*

Pullers, Nail—

Crown, ₩ doz. $18.00 ..... 50%
Crown Prince, ₩ doz. $15.00 ..... 50%
Diamond B, No. 2, doz. $22.; No. 3, $15 ..... 50%
Eureka, 5 ℔ doz., $16.00; 3 ℔ $15 ..... 50%
Giant, No. 1, ₩ doz. $18; No. 2, $16.50; No. 3, $15 ..... 40%
National, ₩ doz. $24.00 ..... 50%
Pelican, ₩ doz. $9.00 ..... 15&10%
Scranton No. 1 and 2, ₩ doz. $9.00
Scranton, No. 3, ₩ doz. $8.50

Pulleys—

Hay Fork, Swivel or Solid Eye ..... doz. $1.60@2.00

Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, ₱ doz. $12.00..... 40%
Hot House, Awning, &c.....60@60&10%
Japanned Clothes Line.....60@60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell'sCeiling or End, Anti-Friction 60%
Stowell's Dumb Waiter, Anti-Friction .. 60&10%
Stowell's Electric Light..... .....50%
Stowell's Side, Anti-Friction.....60%
Sash (Auger Mortise):
Common Sense, 1¾ in., ₱ doz., 18¢; 2 in., 20¢.
Empire.....1¾ in., 17¢; 2 in., 19¢
L. C.....1¾ in., 15¢; 2 in., 17¢
Ideal No. 13..... 1¾ in., ₱ doz., 18¢
Improved.....1¾ in., 17¢; 2 in., 19¢
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy.....1¾ in., 15¢; 2 in., 19¢
Star.....1¾ in., 16¢; 2 in., 19¢
Acme.....1¾ in., 18¢; 2 in., 20¢
Tackle Blocks—See *Blocks.*

Pumps—

Cistern.....60@60&5%
Pitcher Spout.....75%
Pump Leathers, all sizes....gro. $6.00
Flint & Walling's Fast Mail.....50@55%
Flint & Walling's Pitcher Spout 75%
Myer's Pumps, low list 50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.....20%

Punches—

Revolving (4 tubes)...doz. $3.50@3.75
Saddlers' or Drive, good..doz 65@70c
Spring, good quality.....$1.70@1 80
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Springfield Socket..65%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Spring, Leach's Pat.....15%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co..... 35@3½&5%
Tinners' Solid, P., S. & W.Co., ₱ doz., $1.44.....55%

Rail—

Barn Door, &c.—

Barn Door, Light..In. ⅛ ⅝ ¾ 100 feet.....$2.25 $2.75 $3.75
B. D., for N. E. Hangers: Small. Med. Large. 100 feet.....$2 00 2.50 3.00
Sliding Door, Bronzed Wr't Iron, ft. 6¼c
Sliding Door, Iron Painted..2¼@2½c
Sliding Door, Wrought Brass, 1¼ in.. ..... lb. 38c..30%
Cronk's Double Braced Steel Rail, ₱ foot..... 3½¢
Lanes' O. N. T., ₱ 100 ft., 1 inch....$3.00
Lanes' Standard, ₱ 100 ft..... .....4.25
McKinney's None Better.....₱ ft. 2½¢
McKinney's Standard..... .....₱ ft. 3½¢
Moore's, W'r't. Bracket, Steel..... 3½¢
Stowell's Steel Rail.....35&10%
Terry's Steel Rail .....₱ ft. 3½¢

Rakes—

Aug 1, 1899, List:
Cast Steel..... 70c&5&2%
Malleable.....66⅔%
Fort Madison Red Head Lawn. $3.25
Fort Madison Blue Head Lawn.....$3.00

Rasps, Horse—

Disston's 75%
Heller Bros.....60&10& 0%
New Nicholson Horse Rasp.....70&10%
See also *Files.*

Razor Strops—

See *Strops, Razor.*

Reels—

Fishing—

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Populo and Salmon, Single Action, Multiplying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PRN, 302 PR and PRN, 304 P and PN, 00304P and PN, 502 and 502N, 802 and 802N, 02084N, Competitor.50%
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.....40&10%

Registers—

For points on Mississippi River and East:
Black Japanned.....30%
White Japanned.....25%
Bronzed Finishes.....30%
Nickel Plated.....30c&10%
Electro Plated in Brass, &c..30c&10%
White Porcelain.....20%
Solid Brass and Bronze Metal..10%
Note—Higher prices are quoted in territory further West.

Rings and Ringers—

Bull Rings—

	2	2½	3 Inch.
Steel.....	*$1.00*	*1.10*	*1.20 doz.*
Copper.....	*1.30*	*1.40*	*1.50 doz.*

Hog Rings and Ringers—

Hill's Rings....gro. boxes, $3 75@4.00
Hill's Ringers, G. I.....doz. 50@55c
Blair's Rings..... ....₱ gro. $4.25@4.50
Blair's Ringers..... .....₱ doz. 55c@60c
Brown's Rings..... ₱ gro. $4.25@4.50
Brown's Ringers..... ₱ doz. 55c@60c
Perfect Rings..... ₱ gro. $7.25@7.75
Perfect Ringers. ₱ doz.....75@80¢

Rivets and Burrs—

Copper.....40c&10@50%
Iron or Steel:
Tinners' ....55@55 c&10%
Miscellaneous .....55@55 c&10%
NOTE—*This price is often shaded by jobbers.*

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rollers—

Acme, Stowell's Anti-Friction ....50&10%
Barn Door, Sargent's list..60&10&10@70%
Lane's, Stay ....33⅓&5%
Stowell's Barn Door Stay...₱ doz. $1.00

Rope—

Manila, 7-16 in. and larger. lb. .. @1¼ c
Manila.....¾-inch lb. .. @1¼c
Manila..¼ and 5-16 in. lb. .. @15 c
Manila, Tarred Rope, 15 thread..... lb .. @1¼ c
Manila Hay Rope Med'm.lb .. @14 c
Sisal, 7-16 in. and larger, lb. .. @10 c
Sisal ....¾-inch. lb.. @10½c
Sisal.....¼ and 5-16 in. lb. .. @11 c
Sisal, Hay Rope, 2 to 10 ply.....lb. .. @10 c
Sisal, Med'm Lath Yarn.lb... @ 9½c
Cotton Rope:
Best, ¼-in. and larger..lb. 13@14 c
Med'm, ¼-in. and larger lb. 10@12 c
Com.. ¼-in. and larger.lb. 8@10 c
Jute Rope.....lb. .. @5¾c

Wire Rope—

List July 1, '99.....30c@2½%

Ropes, Hammock

Covert Mfg. Co.....45&2%
Covert Saddlery Works.....70%

Rules—

Boxwood..75c&10c&10c&10@75c&10c&10 c&10c&10c&10%
Ivory ...40c&10c&10@40c&10c&10c&10c&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber ... .50&10%
Stanley R. & L. Co.;
Boxwood..... 75&10&10@75&10&10&10&10%
Ivory..... .40&10&10@40&10&10&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cords—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Note.—Extra 5@10% often given on Circulars Cross Cuts, &c. and extra 5@7½ on Hand, Butcher, &c.
Atkins' Circular.....50%
Atkins' Band 50%
Atkins' Cross Cuts 40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws .....40&10%
Atkins' Hand, Compass, &c..... ....40%
Disston Circular Solid and Inserte Tooth..... 50%
Disston Band 2 to 14 in. wide.....60%
Disston Band ¼ to 1¾..... .....70%
Disston Crosscuts.....50%
Disston Narrow Crosscuts.....55%
Disston Mulay, Mill and Drag..... 50%
Disston Framed Woodsaws.....35%
Disston Wo dsaw Blades.....40%
Disston Woodsaw Rods. 25%
Disston Handsaws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Disston Hand Saws, Nos 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Disston Compass, Keyhole, &c.....25%
Disston Butcher Saws and Blades....35%
C. E. Jennings & Co.'s.....25&5@30&5%
Peace Circular and Mill..... .... 45&10%
Peace Cross Cuts, list Jan. 1, '99,45&10&5%
Peace Hand, Panel and Rip....25&10&5%
Richardson's Circular and Mill....45&10%
Richardson's X Cuts, list Jan. 1, '93, 45&10&5%
Richardson's Hand, &c..... 25&10&5%
Simonds' Circular Saws.....50%
Simonds' Crescent Ground Cross Cut Saws.....35%
Simonds' One-Man Cross Cuts....40&10%
Simonds' Gang Mill, Mulay and Drag Saws.....45@45&5%

Hack Saws—

Disston Concave Blades.....35%
Disston K ystone..... .....30%
Disston Hack Saw Frames..... .....30%
Griffin's complete.....50@50&10%
Griffin's Hack Saw Blades....50@50&1 %
Star Hack Saws and Blades..... 15&10%

Scroll—

Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without border, $18; with border, $ 0..... .....20%
Lester, complete, $10.00.....15&10%
Rogers, complete $4.00.....15&10%

Scale Beams—
See *Beams, Scale.*

Scales—

Family, Turnbull's ... .30@30c&10%
Hatch, Counter, No. 171, good quality ....doz. $19.00@19.50
Hatch, Tea, No. 161...doz. $6.00@6.25
Union Platform, Plain ...$2.00@2.10
Union Platform, Striped..$2.15@2 25
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Pelouze Scales—Family, Candy, Grocers' and Postal 33⅓%
"The Standard" Portables.....40&50%
"The Standard" R. R. and Wagon...60%

Scrapers—

Box, 1 Handle .....doz $2.00@2.50
Box, 2 Handle.... doz. $3.00@4.00
Ship, No. 1, doz. $3 50; No 2. $2.25@2.40
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....40&10%
Foot, W. E. Pratt Mfg. Co. ₱ doz. $1.15@$1.25

Screen Window and Door Frames—See *Frames.*

Screw Drivers—
See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..doz. 1 in., $2.40@2.50; 1¼, $2.60@2.65; 1½, $3.85@3.50
Bench, Wood, Beech..doz. $2.00@2.20
Hand, Wood..... ... 35@40%
Hand, Grand Rapids.....35%

Coach, Lag and Hand Rail—

Lag, Common Point, list Oct. 1, '99..... .....65c&10@ ...%
Coach and Lag, Gimlet Point, list Oct. 1, '99..... .....65c&5@ ...%
Hand Rail, list Jan. 1, '81.... 82½c&2%

Jack Screws—

Millers Falls.....50&10&10%
Millers Falls, Roller .....50&10%
P., S. & W.....40&5&40&10%
Sargent.....70&10&10%

Machine—

List Jan. 1, '98.
Flat or Round Head, Iron.....50%
Flat or Round Head, Brass.....50%

Set and Cap—

Set (Iron or Steel) .....75@75c&5%
Sq. Hd. Cap.....70@70c&5%
Hex. Hd. Cap.....70@70c&5%

Wood—

List Nov. 10, 1898. Discounts adopted June 28, '99.
Flat Head, Iron.....80%
Round Head, Iron.....75%
Flat Head, Brass.....77½%
Round Head, Brass.....72½%
Flat Head, Bronze 72½%
Round Head, Bronze.....70%
Drive Screws 82½%
Note.—An extra 5 or 10% is often given.

Scroll Saws—See *Saws, Scroll.*

Scythes—

Scythe Snaths—
See *Snaths, Scythe.*

Seeders—

Raisin—

Enterprise.....25@30%

Sets—

Awl and Tool—

Brad Awl and Tool Sets:
Wood Hdle., 10 Awls.....doz. $2.00
Wood Hdle., 14 Awls, 6 Tools ... doz. $2.25@2.40
Aiken's Sets, Awls and Tools: No. 20, ₱ doz. $10.00, 60&10@60&10&5%
Fray's Adj. Tool Hdls...Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7..... .....50%
Millers Falls Adj. Tool H'dls, No. 1, $12; No. 4, $12; No. 5, $18 .... 15&10%
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $3.50.....40&10@40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe.... ₱ doz.....$9.00

Nail—

Round, assorted.....gro. $3 25@3.75
Octagon..... .....gro. $4 25@4.75
Knurled, Good.....gro. $6.00@6.50
Buck Brothers.....27½%
Cannon's Diamond Point, ₱ gr. $12..25%
Snell's Corrugated, Cup Pt.....50%
Snell's Knurled, Cup Pt..... ....60%&5

Rivet—

Regular list.....70c&5@75%

Saw—

Aiken's Genuine.....₱ doz. $4.50@5.00
Aiken's Imitation .....₱ doz. $3.00@3.10
Atkin's Criterion.....₱ doz. $6.00
Atkin's Adjustable.....₱ doz. $6.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Disston's Star and Mona ch.....35%
Hammer, Bemis & Call Co.'s new Pat. 40%
Morrill's No. 1, $15.00.....40&20%
Nos. 3 and 4, Cross Cut, $24.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
No. 11, $16.00.....40&20%
Taintor Positive, ₱ doz. $18 .....60%

Sharpeners, Knife—

Tanite Mills ₱ gross, $14.40....25@33⅓%

Shaves, Spoke—

Iron..... ....doz. $1.00@1 25
Wood.....doz. $1.75@2.00
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's, ₱ doz. $9.00.....15&10%

Shears—

Cast Iron...	*7*	*8*	*9 in.*
Best ..	*$16.00*	*18.00*	*20.00 gro.*
Good.....	*$13 00*	*15.00*	*17 00 gro.*
*Cheap....	$9.00*	*10 00*	*11.00 gro.*

Straight Trimmers, &c.:
Best quality, Jap.....70c&5@70c&10%
" Nickel..60c&5@60c&10%
Fair qual, Jap...80c&10@80c&10c&10%
" Nickel.....75c&5@75c&10%
Tailors' Shears.....40@40c&10%
Acme Cast Shears.....40c@40&5%
Heinisch's Tailors' Shears.....40@40&5%
National Cutlery Co., Nickel .....60&10%
National Cutlery Co., En. Hdls....70&1 %
Seymour's, Jap.....70c@70&5%
Seymour's Nickel.....60c@60&5%
Seymour's Tailors' Shears.....40%
Wilkinson's Hedge.....50%
Wilkinson's Sheep.....15%

Tinners' Snips—

Forged Handles, Steel Blades..20c&10%
Malleable Handles, Laid with Steel. 40%
Forged Handles, Steel Blades, Berlin. 40c&10%
Niagara Snips.....40%
Seymour's..... .....40@40&5

Pruning Shears and Tools—

Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25@25&10%
Disston's Pruning Hook, ₱ doz. $12.00 25@25&10%
John T. Henry Mfg. Company Pruning Shears all grades.....50&5%
Orange Shears.....50&10%
Grape.....50&10%
Tree Pruners.....75%
P. S. & W. Co.....33⅓@33⅓&10%
Seymour's.....60&10&10@70&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction..... 50%
Patent Roller..... ..60&10@60&10&5%
Patent Roller Hatfield's, Sargent's list, 80&10@80&10&7%
Reading..... .....70&10@75%
R. & E..... .....60&10@60&10&5%
Wrightsville, Hatfield Pattern....80&10%

Sliding Shutter—

Reading list.....70&10@75%
R. & E..... .....60@60&10%
Sargent's list.....60@60&10%

Shells—

Shells, Empty—

Brass Shells, Empty:
First quality, 4 gauges.....60&5%
Club, Rival, Climax, 10 and 12 gauge .. 65&5%
Paper Shells, Empty:
Club, Rival, Climax, 14, 16 and 20 gauge ($7.50 list) .....20&10&5%
Club, Rival, Climax, 10 and 12 gauge 33⅓&5%
Acme, Leader, New Rapid, Smokeless, 10, 12, 16 and 20 gauge..... 33⅓&10&5%
Trap and Metal Lined, 10, 12, 16 and 20 gauge.....33⅓&10&5%
Primrose Club, Blue Rival, Yellow Rival, New Climax, 10, 12, 16 and 20 gauge..... .....20%
High Base, Nitro, Repeater, Defiance, 10, 12, 16 and 20 gauge.....15%

Shells, Loaded—

Loaded with Black Powder..... 40c&5%
Loaded with Nitro Powder..... 40c&10c&10c&5%

Ship Tools—

L. & I. J. White 25%

Shoes, Horse, Mule, &c.—

Factory Shipments:
Horse and Mule, per keg...$3.50@3.60
Burden's, all sizes.....$3.50
Bryden, Phœnix, Perkins, &c $3.60
Diamond State, Shoenberger, Crescent, &c. $3.60..... ....5%

Shot—

Drop, up to B, 25-lb. bag...$1.35@1.45
Drop, up to B, 5-lb. bag ..... .30
Drop, B and larger, 25-lb. bag.... $1.50@1.70
Drop, B and larger, 5-lb bag. .35
Buck, 25 lb. bag..... .....$1.60@1.70
Buck, 5-lb. bag..... .35
Chilled, 25-lb. bag.....$1.60@1.70
Dust Shot, 25 lb. bag..... 2.00
Dust Shot, 5-lb. bag..... ... .50

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or L Handle:

	A1, 1st Grade.	*B2, 2d Grade.*
Plain Back ...	*$10.56*	*$9 60*
Strap Back....	*9.90*	*9 00*
Cleveland Pat'n	*10.20*	*9.30*

	C3, 3d Grade.	*D4, 4th Grade.*
Plain Back....	*$8.70*	*$8.10*
Strap Back.....	*8.10*	*7.50*
Cleveland Pat'n	*8.40*	*7.80*

All other sizes add 30c doz. Black deduct 30c doz.
Note.—The above recently advanced prices to small retailers are often cut by jobbers.

Shovels and Tongs—

Brass Head .....60&10@60&10&10%
Iron Head .....60&10@60&10&5%

Sieves and Sifters—

Hunter's Imitation, gro. $11.00@12.00
Buffalo Metallic, S. S. & Co., ₱ gr.:

14&16	16&18	18&20
$10.00	$12.00	$13.20

Eclipse.....₱ gr. $9.00@ 9.50
Hunter's Genuine....₱ gr. $12.00@12.50
Shaker (Barter's Pat.) Flour Sifters..
₱ doz., $3.00.....25%

Sieves, Wooden Rim—

Mesh 18, Nested, doz.....$0.75@0 80
Mesh 20, Nested, doz..... .85@ .90
Mesh 24, Nested, doz ..... 1.00@1.05

Sinks—

Cast Iron—

Low list.....65@65&5%

NOTE.—*The low list is now generally used, but some jobbers use high list.*

Wrought Steel—

Columbus Galv'd and Enameled..60&5%
Columbus, Painted.....45%
L. & G. 50%

Skeins, Wagon—

Malleable Iron.....70&10@75&10%
Steel .....45@45&5%
I. I. & B. Co. Steel.....45%

Slates—

"D" Slates.....50&10@50&10&10%
Unexcelled Noiseless Slates.....
60&6 tens@60&6 tens&5%
Wire Bound.....40&10@50%
Double Slates, add $1 case, net.

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German.....50@50&5%
Covert Mfg. Co.:
Deroy.....35&2%
High Grade.....45&2%
Jockey.....40&2%
Trojan.....45&2%
Covert's Saddlery Works:
Banner.....75%
Crown.....70%
Triumph.....70%
W. & E. T. Fitch Co.:
Bristol.....40&10%
Empire.....50&5%
National.....50&5%
Clipper.....50&10&5%
Champion.....40&10%
Victor.....60&5%
Oneida Community:
Solid Steel.....65@65&10%
Solid Swivel.....55@65&10%
Sargent's Patent Guarded.....
70&10@70&10&10%

Snaths—

Scythe.....55%

Snips, Tinners'—See *Shears.*

Soldering Irons—

See *Irons, Soldering.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Silver Plated—

Flat Ware .....50&10@60&10%
Wm. Rogers M'f'g. Co.....50&10%

Miscellaneous—

German Silver .....60&10%
Wm. Rogers Mfg. Co.:
18% German Silver.....60%
Rogers' Silver Metal.....50&10%

Springs—

Door—

Gem (Coil).....20%
Star (Coil).....30%
Torrey's Rod, 39 in....₱ doz. $1.10@1.25
Warner's No. 1, ₱ doz. $1.50; No. 2, $3.40.....55@55&10%
Victor (Coil).....60&10@60&10&5%

Carriage, Wagon, &c.

	1¼ in. and wider	..Blk. Hf Brt.	Brt.
Tested and Temp	5½	5¼	6c lb
Oil Tested and Tempered	6½	6¾	7c lb

Cliff's Bolster Springs.....35%
Cliff's Seat Springs.....₱ pair 55¢

Sprinklers, Lawn—

Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....35%

Squares—

Nickel plated.... } *List May 1, '95..*
Steel and Iron... } *70@70&5@..%*
Rosewood Hdl. Try Square and T-Bevels .....60&10@10&10%
Iron Hdl. Try Squares and T-Bevels. 40&10@40&10&10%
Disston's Try Sq. and T-Bevels....60&10%
Winterbottom's Try and Miter...50&10%

Squeezers—

Lemon—

Wood, Common, gro.. No. 0, $5.00; No. 1, $6.50; No. 2, $10.00.
Wood, Porcelain Lined:
Cheap .....doz. $2.00@2.75
Good Grade.....doz. $3.00@3.50
Tinned Iron .....doz. $0.80@1.25
Iron, Porcelain Lined doz. $3.25@3.50
Jennings' Star.....₱ doz. $1.85@1.90
King.....₱ doz. $2.00

Staples—

Barbed Blind.....lb. 9@9½¢
Electricians', Association list.....80%
Fence Staples, same price as Barbed Wire, See Trade Report.
Poultry Netting.....lb. 5½@6¢
Grand Crossing Tack Co.'s list....75&10%

Steels, Butchers'—

Dick's.....40%
Foster Bros'.....30%
C. & A. Hoffmann's.....40%
Nichols Bros.....50%
John Wilson's, list Sept. 1, '94.....25%

Steelyards.....25@25&10%

Stocks and Dies—

Blacksmiths'.....35@40%
Gardner.....50%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25@30%
Curtis Reversible Ratchet Die Stock.25%

Stone—

Scythe Stones—

Pike Mfg. Co., list '95-'96.....33⅓%
Cleveland Stone Co., list Nov., '92..33⅓%

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, ₱ b...8¢
Sand Stone.....5¢
Turkey Oil Stone, Extra, 5 to 9 in.....80¢ } 33⅓@33⅓&10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5 in. $2.80
Arkansas Stone, No. 1, 5 to 8 in. $3.50
(33⅓@33⅓&10%)
Tanite Mills:
Emery Oil, ₱ doz. $5.00.....50@60%

Stoners—

Cherry—

Enterprise.....25@30%

Stops, Bench—

Millers Falls.....15&10%
Morrill's...₱ doz., No. 1, $10.00; No. 2, $11.00, 40&20%

Stops, Window—

Ives' Patent.....25&5%
Taplin's.....45%

Stove Boards—

See *Boards, Stove.*

Stove Polish—See *Polish, Stove.*

Straps, Box—

Cary's Universal.....20&10%

Stretchers, Carpet—

Cast Iron, Steel Points....doz. 65@70c
Cast Steel, Polished.....doz. $2.25
Socket.....doz. $1.75

Stuffers, Sausage—

Miles' Challenge, ₱ doz. $20...50@50&5%
Enterprise Mfg. Co., list Jan. 17 '93..25@25&7½%
National Specialty Mfg. Co., list Jan. 1, '97.....30%

Tacks, Brads, &c.—

List Jan. 15, '99.
Carpet Tacks:
American Blued.....90&10%
American Tinned.....90&10%
American Cut Tacks.....50%
Swedes Iron Tacks.....90&10%
Upholsterers' Tacks.....90&25%
Gimp Tacks.....90&25%
Lace Tacks.....90&25%
Trimmers' Tacks .....90&10%
Looking Glass Tacks.....70%
Bill Posters' and Railroad Tack.... 90&20%
Hungarian Nails .....80&15%
Common and Patent Brads.....70&5%
Trunk and Clout Nails:
Blued .....75&5%
Tinned .....75&5%

Miscellaneous—

Double Point Tacks.....90&5@...%
Steel Wire Brads, R. & E. Mfg. Co.'s list.....50&10@60%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. $3.50
Emerald, S. S. & Co.....60-gal., $4.40
Queen City S. S. & Co., 30-gal.....$3.85
Queen City S. S. & Co., 60-gal.....$4.60

Tapes, Measuring—

American Asses' Skin...40&10@50&5%
Patent Leather.....25@25&10%
Steel.....33⅓@40%
Chesterman's.....25@25&5%
Keuffel & Esser Co., Steel and Metallic, Lower list, 1899.....35%
Lufkin's Steel.....33⅓@35%
Lufkin's Metallic.....30&5%

Thermometers—

Tin Case.....80&10@80&10&10%

Ties, Bale—Steel.

Standard Wire.....50&10&5%

Ties, Wall—

Cleveland, Steel.....₱ 1000, $10.00

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

L. & I. J. White .....20@20&5%

Saw—

Atkins' new list.....40%
Simonds' 33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—Game—

Oneida Pattern.....70&10@75&5%
Newhouse.....40@40&5%
Hawley & Norton.....60&10@65%
Victor (Oneida Pattern)...70&5@70&10%
Star (Blake Pattern).....65@65&5%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes.8@9c
Mouse, Round or Square Wire..... doz. $0.85@1.00
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat.....₱ doz. $15.00
No. 3, Rat.....₱ doz. $5.85
No. 3½, Rat .....₱ doz. $4.50
No. 4, Mouse.....₱ doz. $4.30
No. 5, Mouse.....₱ doz. $3.00
Schuyler's Rat Killer, No. 1, ₱ gr. $13.50; No. 2, ₱ gr. $15.00
Out o' Sight, Mouse, No. 1, ₱ doz. 60¢; Rat, No. 2, $1.25; Mole, $6.00; Gopher, $1.50; Stop Thief, No. 1, $1.25; No. 2, $1.50.

Fly—

Balloon, Globe or Acme..... doz. $1 25; gro. $14.50@15.00
Harper, Champion or Paragon ... doz. $1.50; gro. $17.00

Trimmers, Spoke—

Bonney's No. 1, ₱ doz. $3.00; No. 2, $4.00
Douglas', ₱ doz. $9.00.....20%
Stearns'.....20&10%

Trowels—

Disston Brick and Pointing.....30%
Disston Plasterling.....25%
Disston "Standard Brand" and Garden Trowels.....40%
Peace's Plastering.....25@25&5%
Rose Brick and Plastering...3 @30&10%
Woodrough & McParlin, Plasterring.25&10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Daisy Stove Trucks, Improved pattern ₱ doz. $18.00

Tubs, Wash—

	No. 1	2	3
Galvanized, per doz.	*$5.00*	*5 50*	*6.00*

Galvanized S. S. & Co., with Wringer Attachment, ₱ doz., No. 10, $6.25
No. 20, $6.75; No. 30.....$7.50

Twine—

Miscellaneous—

	BC	B.
Flax Twine—		
No. 9, ¼ and ½-lb. Balls..	*20c*	*24c*
No. 12, ¼ and ½-lb Balls..	*17c*	*20c*
No. 18, ¼ and ½-lb. Balls..	*14c*	*17c*
No. 24, ¼ and ½-lb. Balls..	*14c*	*17c*
No 36, ¼ and ½-lb. Balls..	*13c*	*16c*

Chalk Line, Cotton, ½-lb. Balls.... 18@20c
Cotton Mops, 6, 9, 12 and 15 lb. to doz .....7@8c
Cotton Wrapping, 5 Balls to lb .... 9@16c
American 2-Ply Hemp, ¼ and ½-lb. Balls .....10@12c
American 3-Ply Hemp, 1-lb. Balls.. 10@12c
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine).....8c
India 3-Ply Hemp, 1-lb. Balls.....8c
India 3-Ply Hemp, 1½-lb. Balls.... 7@7½c
2, 3, 4 and 5-Ply Jute, ½-lb. Balls.6½c
Mason Line, Linen, ½-lb. Balls...45c
No. 2½ Mattress, ¼ and ½-lb. Balls 3½c
Wool.....5@5½c

Vises—

Solid Box.....50@....%
Bonney's Saw Vises.....40&10%

Parallel—

Bonney's.....40&10%
Fisher & Norris Double Screw....15&10%
Hollands'.....40@40&10%
Massey's Perfect.....20@25%
Massey's Clincher.....40@40&10%
Morrill's.....20%
Miller's Falls.....45&10%
Parker's:
Victor.....20@25%
No. 870.....35@40%
No. 87.....55@60%
Prentiss.....20@25%
Sargent's.....70&10@70&10&10%
Simpson's Adjustable.....40%
Stephens'.....25@30%
Toles' Woodworking.....25%
Trenton.....40&5@40&10%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00.....40&10%
Disston's D 3 Clamp and Guide, ₱ doz. $30.....25%
Reading.....40&10%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3.....30&7½%

Miscellaneous—

Bignall & Keeler Combination Pipe Vise.....60&5%

Parker's Combination Pipe:
87 Series.....60%
187 Series.....60&5%
No. 870.....40%

Wads—Price Per M.

B. E., 11 up	*.60c*
B. E., 9 and 10	*.70c*
B. E., 8	*.80c*
B. E., 7	*.80c*
P. E., 11 up	*$1.00*
P. E., 9 and 10	*1.25*
P. E., 8	*1.50*
P. E., 7	*1.50*
Ely's B. E., 11 and larger	*$1.70@1 75*
Ely's P. E., 12 to 20	*$3.00@3 25*

Dis. 20&2½%

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Aluminum—
S. S. & Co. Reduced List.....40%

Cast Iron, Hollow—

Stove Hollow Ware:
Ground.....60@60&7½%
Unground.....65@65&10%
White Enameled Ware:
Moslin Kettles . 75&10@75&10&5%
Boilers and Saucepans...55@55&5%
Tinned Boilers and Saucepans..... 55@55&5%

See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware, list July '99.40%
Granite Ware, list Jan. 1, '94, revised Jan. 2, '95.....40&10%
Second Quality, Agate Nickel Steel..65%
Second Quality, Granite.....70&10@70&10&10%
Lion Clad:
Peppered Ware, high list.....70%
Princess Ware, special list.....33⅓%
Mottled Ware, high list.....75&15%
Never Break Enameled.....50&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*.40c*	*45c*	*50c*	*60c*

Steel Hollow Ware.

Avery Spiders & Griddles .....70@70&5%
Avery Kettles.....60@60&10%
Lava.....50&5%
Never Break Spiders and Griddles..... 70@70&5%
Never Break Kettles.....60@60&10%
Solid Steel Spiders & Griddles. 70@70&5%
Solid Steel Kettles.....60@60&10%
Solid Steel Ware, Enameled .....50&5%

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5%

Washboards—

Solid Zinc: ₱ doz
Crescent, family size, bent frame..$3.00
Red Star, laundry size, stationary protector.....$4.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector.....$2.50
Wilson, family size, bent frame...$2.50
Single Zinc Surface:
Naiad protector, family size, open back perforated.....$2.25
Saginaw Globe, protector, family size, ventilated back.....$2.10
Wilson, bent frame, family size, ventilated back $2 10

Washers—
Leather, Axle—

Solid.....80@10&10@85%
Patent.....85@35&5%
Coil: ⅜ 1 1⅛ 1¼ *Inch.*
12c 13c 14c 16c *per 100*

Iron or Steel—

Size bolt .... *5-16* ⅜ ½ ⅝ ¾
Washers.... *$6.00 5.10 3.80 3.60 3.40*
In lots less than one keg add ¼c per lb., 5-lb. boxes add ½c to list.
NOTE.—*Jobbers' prices generally lower than manufacturers'.*

Washer Cutters—
See *Cutters, Washer.*

Washing Machines—
See *Machines, Washing.*

Water Coolers—
See *Coolers, Water.*

Weaners—
Tyler's New Hatter—No. 1 ₩ doz. $3.45; No. 2, $3.70; No 3, $4.00; No. 4, $4 30
Tyler's Safety—Nos. 1 and 2, ₩ doz. $1.70; No. 3, $2.00; No. 4, $2.30.

Wedges—
Oil Finish.....*lb. 2.70@2.85c*
Axe Finish.....*lb. 3.00@3.10c*

Weights, Sash—
Carloads at factory.....*$18.00@20.00*
Less than carloads at factory..... *$20.00@22.00*
Note.—Some Foundries are naming higher prices.

Well Buckets, Galvanized
See *Pails, Galvanized.*

Wheels Well—
8-in., $1 75@2.00; 10-in., $2.25@2.60; 12-in., $2.75@3.25; 14-in., $4 00@4.50

Wire and Wire Goods—
Market: Nos. 6 to 16:
Br. & Ann.....70&5@72½&5%
Cop'd.....65&5@67½&5%
Galv.....65&5@67½&5%
Tin'd, Tin'd list.....72½&5@75%
Stone, Br. and Ann'd:
Nos. 19 to 26.....77½@77½&2½%
Nos. 27 to 36.....77½&5@77½&7½%
Annealed Wire on Spools.....
60&10@60&10&5%
Brass, list Feb. 26, '98.....15%
Copper, list Feb. 26, '98.....15%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to ₤, 40%
Wire Clothes Line, see *Lines.*
Wire Picture Cord, see *Cord.*

Bright Wire Goods—
Iron and Brass, list July 1, 1899....
80&10@80&10&10%

Wire Cloth and Netting—
Galvanized Wire Netting.....
80@80&5%
Painted Screen Cloth per 100 ft..
$1 25@ ...

Wire Barb—See *Trade Report.*

Wire, Rope—See *Rope, Wire.*

Wrenches—
Agricultural.....75&5@75&10&5%
Baxter's S.....70%
Coes' Genuine.....33⅓&10&5&3%
Coes' "Mechanics'.33⅓&10&10&5&3%
Acme.....60&60&5%
Aiken's Pocket (Bright).....$2.00@3.20
Alligator.....75%
Bemis & Call's:
Adjustable S.....35&5%
Adjustable S Pipe.....40%
Brigg's Pattern.....30&10%
Combination Black.....40&10%
Combination Bright.....40&5%
Cylinder or Gas Pipe.....55%
Extra Heavy.....45%
Merrick's Pattern.....50%
No. 3 Pipe, Bright.....50%
Bindley Automatic.....40%
Boardman's.....33⅓%
Bull Dog, W. & B.....70@70&10%
Donohue's Engineer.....40&10%
Eagle.....50&10%
Hercules.....70&10@75%
Solid Handles, P. S. & W.....50%
Stevenson.....60&10&10%
Stillson's.....55%

Wrought Goods—
Staples, Hooks, &c., list March 17, '92.....85@85&10%

Yokes, Neck—
Covert Saddlery Works, Trimmed...70%
Covert Saddlery Works, Neck Yoke Centers.....70%

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.. 20%

Zinc—
Sheet.....*lb 7¾c@8c*

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.. .. 7½@ 8¼
Lead, American White, in Oil:
Lots of 500 ℔ or over .. .. @ 6
Lots less than 500 ℔.. .. @ 6¼
Lead, White, in oil, 25 ℔ tin pails, add to keg price.. .. @ ¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.. .. @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.. .. @ 1½
Lead White, Dry in bbls.. .. @ 5½
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.
Zinc, American, dry.. ₩ ℔ 4½@ 5
Zinc, Paris, Red Seal.. .. @ 8½
Zinc, Paris, Green Seal.. .. @ 9½
Zinc, Antwerp, Red Seal.. .. @ 7½
Zinc, Antwerp, Green Seal.. .. @ 8½
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over.. .. @11¼
lots less than 1 ton.. .. @12½
Zinc, V.M. in Poppy Oil, Red Seal, lots of 1 ton and over.. .. @10¼
lots of less than 1 ton.. .. @11¼
DISCOUNTS.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.

Dry Colors.

Black, Carbon.....₩ ℔ 6 @10
Black, Drop, Amer.. .. 3 @ 5
Black, Drop, Eng.. .. 5 @10
Black, Ivory.. .. 9 @20
Blue, Celestial.....₩ ℔ 5½@ 8
Blue, Chinese.....33 @36
Blue, Prussian.....80 @35
Blue, Ultramarine.....7 @35
Brown, Spanish.....1½@ 1
Brown, Vandyke, Amer.....2½@ 5%
Brown, Vandyke, Foreign.....2½@ 5%
Carmine, No. 40, in bulk.....$2.20@2.35
Carmine, No. 40, in ℔ bottles. 2.40@ ..
Carmine, No. 40, in ounce bot. 2.40@3.50
Green, Chrome, ordinary.. .. 5 @ 6
Green, Chrome, pure.....19 @25
Lead, Red, bbls. and ½ bbls.. .. @ 6
Lead, Red, kegs.. .. @ 6½
Litharge, bbls. and ½ bbls.. .. @ 6
Litharge, kegs.. .. @ 6½
Ocher, French Washed.. .. 1½@ 2½
Ocher, German Washed.. .. 4½@ 5
Ocher, American.. ₩ ton $10.00@15.00
Orange Mineral, English.. ₩ ℔ 9 @ 9½
Orange Mineral, French.. .. 10½@10¾
Orange Mineral, German.. .. 9 @ 9½
Orange Mineral, American.. .. 7¾@ 8
Red, Indian, English.. .. 4½@ 8½
Red, Indian, American.. .. 3 @ 3½
Red, Turkey, English.. .. 7½@10
Red, Tuscan, English.. .. 7 @10
Red, Venetian, Amer.. ₩ 100 ℔ .80 @1.10
Red Venetian, English. ₩ ℔.. .. 1½@ 2
Sienna, Italian, Burnt and Powdered.. ₩ ℔ 2½@ 5
Sienna, Ital., Raw, Powd.. .. 2½@ 5
Sienna, American, Raw.. .. 1¼@ 1½
Sienna, American, Burnt and Powdered.. ₩ ℔ 1¼@ 1½
Talc, French.. .. ₩ 100 ℔ $1.25 @1.50
Talc, American.. .. .90 @1.10
Terra Alba, French, ₩ 100 ℔.. .. 80 @1.00
Terra Alba, English.. .. .85 @1.00
Terra Alba, American No. 1.. .. .75 @70
Terra Alba, American No. 2.. .. .45 @50
Umber, Turkey, Bnt. & Pow. ₩ ℔ 2½@ 3½
Umber, Turkey, Raw & Powd. 2½@ 3½
Umber, Bnt. Amer.. .. 1½@ 1¾
Umber, Raw, Amer.. .. 1½@ 1¾
Yellow, Chrome.. .. .10 @25
Vermilion, American Lead.. .. 10 @20
Vermilion, Quicksilver, bbls or kegs.. .. @64
Vermilion, Quicksilver, bags.. .. @65
Vermilion, Quicks'r, sm'r pkgs.. .. @69
Vermilion, English, Import.. .67 @68
Vermilion, Artificial.. .. 5 @20
Vermilion Chinese.. .. .80 @90

Colors in Oil.

Black, Lampblack. Best.. .. 13 @14
Black, Lampblack, Common.. 10 @11
Blue, Chinese.. .. .35 @40
Blue, Prussian.. .. .30 @35
Blue, Ultramarine.. .. .12 @16
Brown, Vandyke.. .. 8 @13
Green, Chrome.. .. 8 @14
Green, Paris.. .. .20 @24
Sienna, Raw.. .. 8 @13
Sienna, Burnt.. .. 8 @13
Umber, Raw.. .. 8 @12
Umber, Burnt.. .. 8 @12

Miscellaneous.

Barytes, Foreign, ₩ ton.. .. $18.00@20.00
Barytes, Amer. floated.. .. 18.00@20.00
Barytes, Crude.. .. 8.00@10.00
Chalk, in bulk.. .. ₩ ton 2.15@ 2.25
Chalk, in bbls.. .. ₩ 100 ℔ .35@ ..
China Clay, English.. ₩ ton 15.00@17.00
Cobalt, Oxide.. .. ₩ 100 ℔ 2.00@ 2.10
Whiting, Common. ₩ 100 ℔ .42½@ .50
Whiting, Gilders.. .. .47@ .56
Whiting, extra Gilders'.. .. .57@ .64

Putty.

In barrels and ⅛ bbls.. .. @1 7-10
In tubs.. .. @ 1¾
In tin cans.. .. @ 3¼
In bladders.. .. @2.20

Spirits Turpentine.

In Southern bbls.. .. @53½¢
In machine bbls .. .. @54 ¢

Glue.

Low Grade.....₩ ℔ 13 @15
Cabinet.....13 @16
Medium White.....14 @16
Extra White.....16 @25
French.....12 @25
Irish.....13 @15

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....₩ gal. 42 @43
Linseed, City, boiled.....44 @45
Linseed, Sta e and West'n, raw .. @38
Linseed, raw Calcutta seed.. .. @60
Lard, Prime City, present make 41 @43
Lard, Extra No. 1.. .. .35 @37
Lard, No. 1.. .. .31 @32
Cotton-seed, Crude.. .. .21 @21¼
Cotton-seed, Summer Yellow, prime.. .. .26 @26¾
Cotton-seed Summer Yellow, off grades.. .. .25 @25½
Sperm, Crude.. .. .50 @52
Sperm, Natural Spring.. .. @ ..
Sperm, Bleached Spring.. .. @ ..
Sperm, Natural Winter.. .. .55 @ ..
Sperm, Bleached Winter.. .. .60 @ ..
Whale, Crude.. .. @ ..
Whale, Natural Winter.. .. @43
Whale, Bleached Winter.. .. @45
Whale, Extra Bleached Win.. .. @48
Menhaden, Crude, Sound.. .. .23 @24
Menhaden, Light Pressed.. .. .28 @29
Menhaden, Bleached Winter.. .. @41
Menhaden, Extra Bleached.. .. .34 @35
Tallow, Western, prime.. .. .44 @45
Cocoanut, Ceylon.. .. 5½@ 5¾
Cocoanut, Cochin.. .. 6¼@ 6¾
Cod, Domestic.. .. .33 @35
Cod, Newfoundland.. .. .38 @40
Red Elaine.. .. .28 @30
Red Saponified.. .. ₩ ℔ 4¼@ 4¼
Bank.. .. ₩ gal. .. @27
Straits.. .. @28
Olive, Italian, bbls.. .. .52 @57
Neatsfoot, prime.. .. .45 @50
Palm, prime, Lagos.. .. ₩ ℔ 5¼@ 5¼

Mineral Oils.

Black, 29 gravity, 25@30 cold test.. .. ₩ gal. 7¾@ 8¼
Black, 29 gravity, 15 cold test. 8¾@ 9¼
Black, summer.. .. 7¾@ 7¾
Cylinder, light filtered.. .. 13¾@16¾
Cylinder, dark filtered.. .. 11¾@16¾
Paraffine, 23½@24 gravity.. .. 9¼@ 9¾
Paraffine, 25 gravity.. .. 8½@ 8¾
Paraffine, 28 gravity.. .. 7¾@ 7¾
Paraffine, red, No. 1.. .. 9 @ 9½
In small lots ½¢ advance.

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CURRENT METAL PRICES.

OCTOBER 18, 1899.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: Duty, Round, 0.6¢ ₩ lb; Square, 0.8¢ ₩ lb
1 to 1⅞ in. round and square..... ₩ lb 2.50@2.60¢
1¼ to 4 in. x ⅜ to 1 in.....
Refined Iron:
1 to 1⅞ in. round and square..... ₩ lb 2.60@2.70¢
1¼ to 4 in. x ⅜ to 1 in.....
1¼ to 4 in. x ¼ to 5-16..... ₩ lb 2.80@2.90¢
Rods—⅜ and 11-16 round and square. ₩ lb 2.80@2.90¢
Angles: Cts ₩ lb
3 in. x ¼ in. and larger..... 3.10¢
3 to 3½ in. x 3-16 in..... 3.25¢
1¼ to 3 in. x ¼ in..... 3.30¢
1¼ to 2¾ in. x 3-16 in and thicker..... 3.25¢
1 to 1¼ in. x 3 16 in..... 3.30¢
1 to 1¼ x ⅛ in..... 3.35¢
⅞ x ⅛ in..... 3 45¢
¾ x ⅛ in..... 3.50¢
⅝ x ⅛ in..... 4.60¢
⅛ x 3-32 in..... 5.10¢
Tees:
1 in..... 3.40¢
1¼ to 2¾ in..... 3.30¢
3 in. and larger..... 3.10¢
Beams..... 3.50¢
Channels..... 3.50¢
Bands—1¼ to 6 x 3-16 to No. 8 ..... ₩ lb 2.90 ¢@ 3.00¢
"Burden's Best" Iron, base price.. ₩ lb .....3.40¢
Burden's "H. B. & S. Iron, base price..... ₩ lb .....3.20¢
"Ulster"..... ₩ lb .....3.40¢
Norway Bars..... 3.80 @ 4.30¢
Norway Shapes..... 4.30 @ 4.80¢

Merchant Steel from Store—

per lb
Open Hearth and Bessemer Machinery ...3.00 to 3 10¢
Toe Calk, Tire and Sleigh Shoe..... $3.25@3.50¢
Best Cast Steel, base price in small lots..... 8 ¢
Best Cast Steel Machinery, base price in small lots..... 6 ¢

Soft Steel Sheets—

¼ inch.....	3.30¢	No. 14.....	3.40¢
3-16 inch.....	3.40¢	No. 16.....	3.50¢
No. 8.....	3 30¢	No. 18.....	3 55¢
No. 10.....	3.30¢	No. 20.....	3.60¢
No. 12.....	3.35¢	No. 22.....	3.65¢

Sheet Iron from Store.

Black.

	Common American.	R. G. Cleaned American.
Nos. 10 to 16.....	₩ lb, 3.45.....	3.45¢
Nos. 17 to 21.....	₩ lb, 3.50.....	3.55¢
Nos. 22 to 24.....	₩ lb, 3.55.....	3.65¢
Nos. 25 and 26.....	₩ lb, 3.60.....	3.70¢
No. 27.....	₩ lb, 3.65.....	3.75¢
No. 28.....	₩ lb, 3.70.....	3.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 10½¢
Patent Planished..... ₩ lb A, 9¾¢; B, 8¾¢, net.
Patent Planished Sheet Steel..... ₩ lb 8¾¢

Galvanized.

	B. B.
Nos. 10 to 16.....	₩ lb, 12¢
Nos. 17 to 21.....	₩ lb, 13¢
Nos. 22 to 24.....	₩ lb, 14¢
Nos. 25 to 26.....	₩ lb, 15¢
No. 27.....	₩ lb, 16¢
No. 28.....	₩ lb, 17¢
No. 29.....	₩ lb, 19¢
No. 30.....	₩ lb, 21¢

67½@70% off.

36 in. 1¢ ₩ lb higher.

Foreign Steel from Store—

Best Cast.....	₩ lb 14 ¢
Extra Cast.....	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear.....	₩ lb 14 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality.....	₩ lb 9 ¢
3d quality.....	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 14 ¢
2d quality.....	₩ lb 13 ¢
3d quality.....	₩ lb 11 ¢
R. Mushet's "Special".....	₩ lb 46 ¢
" " " Annealed.....	₩ lb 75 ¢
" " "Titanic".....	₩ lb 19 ¢
Hobson's Choice XX Extra Best.....	₩ lb 35 ¢
Jessop Self Hardening.....	₩ lb 40 ¢
Seamans' "Nelson" Steel.....	40 ¢
Hobson Self-Hardening.....	₩ lb 40 ¢

METALS—

Tin—

Duty.—Pigs, Bars and Block. Free.	Per ₩ lb
Banca, Pigs.....	34½¢
Straits, Pigs.....	33½¢
Straits in Bars.....	34½¢

Tin Plates—

American Charcoal Plates.

Calland Grade:
IC, 14 x 20..... $7.50
IX, 14 x 20..... 9.00
Melyn Grade:
IC, 14 x 20..... 7.00
IX, 14 x 20..... 8.50
Allaway Grade:
IC, 14 x 20..... 6.15
IX, 14 x 20..... 7.25

American Coke Plates—Bessemer—

IC, 14 x 20 .....108 lb..... $5.30@5.40
IX, 14 x 20..... 6.25@6.30
IXX, 14 x 20..... 7.50@7.60

American Terne Plates—

IC, 20 x 28..... $10.50
IX, 20 x 28..... 12.50

Tin Boiler Plates, American—

IXX, 14 x 26.....112 sheets..... $13.00
IXX, 14 x 28.....112 sheets..... 14.00
IXX, 14 x 31.....112 sheets..... 15.50

Copper—

Duty: Pig, Bar and Ingot and Old Copper free Manufactured, 2½¢ ₩ lb.

Ingot—

Lake..... 19@19¼¢
Ansonia grade Casting..... 18@18¼¢

Sheet and Bolt—

February 2, 1899. Prices, in cents per pound. Sheet 30 x 60. Net.

Not wider than	Not longer than	And longer than	64 oz. & over, 50 lb. sheet, 30 x 60 and heavier.	32 oz. to 64 oz., 25 to 50 lb.	24 oz. to 32 oz. 18¾ to 25 lb.	16 oz. to 24 oz. 12½ to 18¾ lb.	14 oz. and 15 oz. 11 to 12½ lb.	12 oz. and 13 oz. 9½ to 11 lb.	10 oz. and 11 oz. 7¾ to 9½ lb.	8 oz. and 9 oz. 6¼ to 7¾ lb.	Lighter than 8 oz.
Ins.	Ins.	Ins.									
30	72	.....	22½	22½	22½	22½	23½	24½	25½	28½	31½
30	96	72	22½	22½	22½	22½	23½	25½	28½	31½	
30	.....	96	22½	22½	22½	22½	24½	28½			
36	72	.....	22½	22½	22½	22½	24½	26½	29½	32½	
36	96	72	22½	22½	22½	22½	24½	28½	31½		
36	120	96	22½	22½	22½	23½	25½				
36	.....	120	22½	22½	23½	24½					
48	72	.....	22½	22½	23½	24½	26½	29½	32½		
48	96	72	22½	22½	23½	25½	27½	30½			
48	120	96	22½	22½	24½	26½	30½				
48	.....	120	22½	23½	25½	28½					
60	72	.....	22½	23½	23½	25½	28½	33½			
60	96	72	22½	23½	24½	26½	31½				
60	120	96	22½	23½	25½	28½					
60	.....	120	22½	24½	26½	30½					
72	96	.....	22½	23½	25½	30½					
72	144	96	22½	24½	27½	32½					
72	.....	144	23½	25½	30½						
108 wider than 108	120	.....	23½	25½	31½						
	.....	120	25½	26½							
	144	.....	26½	28½							
	.....	144	27½	30½							

Bolt Copper, ⅝ inch diameter and over, ₩ lb 2½¢
Circles, Segments and Pattern Sheets, 3¢ ₩ lb advance over price of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper, 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper, 20 in. wide and under, 1¢ ₩ lb advance over the price for Cold Rolled Copper.
All Polished Copper, over 20 in. wide, 2¢ ₩ lb advance over the price for Cold Rolled Copper.

Planished Copper—

1¢ ₩ lb more than Polished Copper.

Copper Bottoms, Pits and Flats—

14 oz. to square foot and heavier, ₩ lb .....26½¢
12 oz. and up to 14 oz. to square foot, ₩ lb .....27½¢
10 oz. and up to 12 oz., ₩ lb .....29½¢
Lighter than 10 oz., ₩ lb .....31½¢
Circles less than 8 in. diameter, 2¢ ₩ lb addition.
Circles over 13 in. diameter are not classed as Copper Bottoms.

Copper Wire—

Hard and Soft Drawn—B. & S. Gauge.

Nos... 0000 to 8	9 and 10	11 and 12
Base	½¢	¾¢ ₩ lb adv.
Nos..... 13	14	15	16
	¼¢	¾¢	1¢	1¼¢ ₩ lb adv.
Nos..... 17	18	19	20
	1¾¢	2¢	2¼¢	2¾¢ ₩ lb adv.

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
Feb. 6, 1899. Net. Outside Diameter.

Stubs' W. G.	B. & S. W. G.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1¼	1½
4-11	3- 9	...	.....	...	.....	33	31	30	29	28	27	25	24
12	10	...	.....	37	35	33	31	30	29	28	27	25	24
13	11	...	.....	37	35	33	31	30	29	28	27	25	24
14	12	...	41	37	35	33	31	30	29	28	27	25	24
15	13	...	42	38	36	33	32	31	30	30	28	26	25
16	14	...	43	39	37	34	33	32	31	30	29	26	25
17	15	...	44	40	38	35	34	33	32	31	30	27	26
18	16	61	46	42	39	36	35	34	32	31	30	28	27
19	17	62	47	43	40	37	36	35	34	33	32	30	29
20	18-19	64	49	44	41	39	38	37	36	35	34	32	31
21	20	66	51	46	43	41	40	39	38	37	36	35	34
22	21	7	56	48	44	42	41	40	39	38	37	37	36
23	22	76	61	50	46	44	43	42	41	40	39	39	39
24	23	81	66	53	48	46	45	44	43	41	40	40	41
25	24	86	71	56	51	49	47	46	45	43	43	44	45

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Iron Pipe Sizes—Brass

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6 inch
36	32	29	27	21	21	21	21	21	21	21	26	24	25	27	28 ₩ lb

Copper, Bronze or Gilding Tubes, 3¢ ₩ lb additional

Brazed Brass Tubing.

(*To No. 19, inclusive.*) Feb. 26 1896
Brown & Sharpe's gauge standard.

	Per lb.
Plain Round Tube, ¼ in. up to 2 in.....	$0.35
" " ⅛ " " ⅛ "	.36
" " ⅛ " " ⅛ "	.38
" " ⅛ " " ⅛ "	.41
" " 5-16 " " ⅜ "	.48
" " ¼ " 5-16 "	.65
" " 3-16 " ¼ "	1.00
" " ⅛ " 3-16 "	1.50
Smaller than ¼ inch.....	Special
3 inch and larger.....	.40
Over 3 inch to 3½ inch, inclusive.....	.45
Over 3½ inch	.50

Bronze and Copper, advance on Brass List, 3 cents.
Discount from list ⅞..... 20@25%

Roll and Sheet Brass—

(*Brown & Sharpe Standard Gauge.*)

Common High Brass. Wider than and including	in. 2	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
	12	14	16	18	20	22	24	26
To No. 20, inclusive.	.22	.23	.25	.27	.29	.31	.33	.36
Nos. 21, 22, 23 and 24	.22	.24	.26	.28	.30	.32	.34	.37
Nos. 25 and 26	.23	.24½	.27	.29	.31	.33	.35	.38
Nos. 27 and 28	.23	.25	.28	.30	.32	.34	.36	.39
Common High Brass. Wider than and including	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in. 38	in. 40
	28	30	32	34	36	38	40	
To No. 20, inclusive..	.39	.42	.46	.50	.55	.60	.65	*
Nos. 21, 22, 23 and 24.	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26.....	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28.....	.42	.45	.49	.53	.58	.65	.75	

*Special prices not less than 80 cents.
Add 1½¢ ₩ lb additional for each number thinner than Nos. 28 to 38 inclusive. Discount from List..... 10%

Wire in Coils. List February 26, 1896.

Brown & Sharpe's gauge the standard.	Com. high brass.	Low brass.	Gild'g bronze and copper
All Nos. to No. 10, inclusive....	$0.28	$0.27	$0.28
Above No. 10 to No. 16.....	.23½	.27½	.28¼
No. 17 and No. 18.....	.24	.28	.32
No. 19 and No. 20.....	.25	.29	.33
No. 21.....	.26	.30	.34
No. 22.....	.27	.31	.35
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.83
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2.00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Discount, Brass Wire, 10%; Copper Wire, NET.
List November 16, 96.
Spring Wire, 2¢ ₩ lb advance.

Spelter—

Duty: In Blocks or Pigs, 1¢ ₩ lb
Western Spelter..... 5¾@6¢

Zinc.

Duty: Sheet, 2¢ ₩ lb.
600 lb casks.....8¼¢ | Per lb.....8¾¢

Lead.

Duty: Pigs and Bars and Old, 2½¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.
American Pig..... 5@5½¢
Bar..... 5¾¢
Pipe (full lengths), subject to discount 20%..... 6¾¢
Pipe cut lengths), subject to discount 20%..... 7¾¢
Tin Lined Pipe, subject to discount 20%..... 12½¢
Block Tin Pipe, subject to discount 20%..... 45¢
Sheet (full rolls) subject to discount 20%..... 7¾¢
Sheet (cut rolls (subject to discount 20%..... 8¾¢
Old Lead in exchange, 4¢ ₩ lb.

Solder.

½ & ½, guaranteed..... 21¢
No. 1..... 18½@19¢

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Duty, ¾¢ ₩ lb.
Cookson..... ₩ lb 11½¢
Hallett's..... ₩ lb 10½¢
U. S..... ₩ lb 10½¢

Aluminum—

Duty: Crude, 8¢ ₩ lb. Plates, Sheets, Bars and Rods. 15¢ ₩ lb.

No. 1 Aluminum (guaranteed over 99% pure), in ingots for remelting:
Small lots..... ₩ lb 37¢
100-lb lots..... ₩ lb 35¢
No. 2 Aluminum (guaranteed to be over 90% pure), in ingots for remelting:
Small lots..... ₩ lb 34¢
100-lb lots..... ₩ lb 33¢
Aluminum Sheet, B. & S. gauge. 50 lb or more.

Wider than	6-in.	14-in.	24-in.
And including.....	14-in.	24-in.	30-in.
	₩ lb.	₩ lb.	₩ lb
Nos. 13 to 19.....	$0.40	$0.42	$0.45
No. 20.....	.42	.44	.47
Nos. 21 to 23.....	.44	.46	.49
No. 24.....	.44	.48	.51
No. 25.....	.46	.49	.52
No. 26.....	.45	.52	.57
No. 27.....	.46	.55	.60
No. 28.....	.46	.55	.62
No. 29.....	.47	.58	.67
No. 30.....	.48	.62	.75

Note.—Lots of less than 50 lb 5¢ ₩ lb extra.

Aluminum Wire, B. & S. Gauge.

Larger than No. 9.	₩ lb 40¢	No. 15.....	₩ lb 43¢
No. 9 to No. 10..	₩ lb .40½¢	No. 17.....	₩ lb 50¢
No. 11.....	₩ lb 41 ¢	No. 18.....	₩ lb 55¢
No. 12.....	₩ lb 41½¢	No. 19.....	₩ lb 60¢
No. 13.....	₩ lb 42 ¢	N . 20.....	₩ lb 65¢
No 14	₩ lb 4 1½¢	No. 21.....	₩ lb 85¢

Old Metals.

Dealers' Purchasing Prices Paid in New York.

Heavy Copper.....	₩ lb 15 ¢
Light and Tinned Copper.....	₩ lb 13¾¢
Heavy Brass.....	₩ lb 11 ¢
Light Brass.....	₩ lb 8¼¢
Lead.....	₩ lb 3½¢
Tea Lead.....	₩ lb 3½¢
Zinc.....	₩ lb 4 ¢
No. 1 Pewter.....	₩ lb 18 ¢
No. 2 Pewter.....	₩ lb 11 ¢
Tin Plate Scrap.....	₩ ton $5.00
Wrought Scrap Iron.....	₩ gross ton $15.50
Heavy Cast Scrap.....	₩ gross ton $13.50
Stove Plate Scrap.....	₩ gross ton $9.00
Burnt Iron.....	₩ gross ton $7 00